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FINAL ENVIRONMENTAL IMPACT STATEMENT

Rail Rapid Transit Extension to Chicago O'Hare Airport

UMTA PROJECT NO. IL-03-0046

NATURAL HISTORY SURVEY
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The Chicago Department of Public Works (DPW) proposes to construct a rail rapid transit extension to O'Hare Airport in Chicago, Illinois with Federal capital grant assistance. The proposed project includes a 7.6 mile extension of the Chicago Transit Authority's (CTA) Milwaukee Line which runs in the median of the Kennedy Expressway. In addition, three intermediate stations each with adjacent park-and-ride facilities and a station at O'Hare Airport would be constructed.

The project will require capital assistance under the Urban Mass Transportation Act of 1964, as amended. The total project cost is estimated to be $152.5 million. The Federal share of this project is proposed to be $122 million.

Pursuant to applicable laws, the enclosed Final Environmental Impact Statement on the proposed project has been prepared. The UMTA review process has taken into account comments of various agencies, organizations, and individuals on the Draft EIS which was circulated starting in May, 1978. The Draft EIS was revised where necessary to address issues which were raised.

The Final statement is being sent to appropriate agencies, as well as those who commented on the draft. UMTA will wait a minimum of 30 days, ending on SEP 14 1978, before reaching a decision on implementation of this project.

Sincerely,

Peter Benjamin

Peter Benjamin
Director
Office of Program Analysis

DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION
WASHINGTON, D.C. 20590

FINAL ENVIRONMENTAL IMPACT STATEMENT

RAIL RAPID TRANSIT EXTENSION TO O'HARE AIRPORT

Chicago, Illinois

UMTA Project IL-03-0046

This transportation improvement is proposed for funding under an Urban Mass Transportation Administration capital grant.

This statement is submitted pursuant to Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969; Sections 3(d) and 14 of the Urban Mass Transportation Act of 1964; Section 4(f) of the Department of Transportation Act of 1966; and Section 106 of the National Historic Preservation Act of 1966.

AUG 8 1978
Date

By: John K Taylor
John K. Taylor
Associate Administrator
for Transit Assistance

PREFACE

The Final Environmental Impact Statement (EIS) was prepared by the Urban Mass Transportation Administration (UMTA) in cooperation with the City of Chicago Department of Public Works (DPW) to document the environmental impacts of a proposed rail rapid transit project in the Metropolitan Chicago Area.

The Draft EIS for the project was circulated to various Federal, state, and local agencies and to interested organizations and individuals in accordance with guidelines of the Council on Environmental Quality and U.S. Department of Transportation regulations. UMTA received comments on the Draft EIS for sixty (60) days after the official start of circulation on Friday, May 12, 1978. The Department of Public Works held a public hearing on the Draft EIS for the proposed project on Thursday, June 15, 1978 in Chicago, Illinois. UMTA and the Department of Public Works have addressed all substantive comments received on social, economic, and environmental issues in this Final EIS. Changes from the Draft EIS are indicated by vertical margin lines in this final text.

Copies of the Final Statement may be obtained, as supplies permit, or inspected at:

Urban Mass Transportation Administration
Region V
300 South Wacker Drive
Chicago, Illinois 60606

City of Chicago Department of Public Works
Research and Development Division
Room 810 - City Hall
Chicago, Illinois 60602

Copies of the Final Statement may be inspected at:

Municipal Reference Library
Room 1004 - City Hall
Chicago, Illinois 60602

Statement can be purchased from:

Environmental Law Institute
1346 Connecticut Avenue, N.W.
Washington, D.C. 20036

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Nat Hist. Survey

SUMMARY

FINAL ENVIRONMENTAL IMPACT STATEMENT

Department of Transportation
Urban Mass Transportation Administration

1. Name of Action: Administrative Action

2. Description of Proposed Action:

This project involves the extension of the Kennedy Rail Rapid Transit Line from its present terminus at Jefferson Park to O'Hare International Airport. The two track extension of the existing line would be constructed in the median of the Kennedy Expressway from Jefferson Park to the Northwest Tollway. At this junction, the extension would cross under the inbound roadway of the Tollway, and continue in the median of the O'Hare access road. Upon approaching the terminal area, the extension would go into a subway to be constructed beneath the existing parking garage. The transit line would terminate in a stub-end station which would service the major airport terminals and facilities adjacent to the airport.

Along the 7.6 mile length of the extension, there would be four stations -- three intermediate stations with adjoining park-n-ride and kiss-n-ride facilities, and a station at O'Hare. The intermediate stations, located at Harlem Avenue, Cumberland Avenue, and Des Plaines River Road (Rosemont Station) would be constructed totally within expressway right-of-way. The provision of park-n-ride structures would necessitate the relocation of a total of four existing expressway access ramps. Reconstruction of intersections at the three station locations would redirect traffic movements of expressway and station oriented vehicles while retaining the availability of all existing traffic movements. Directly west of the Rosemont station, the Rosemont yard, including storage facilities, extension trackage, and a repair shop, would be constructed. The project would involve no property acquisition.

The O'Hare extension of the Kennedy Rapid Transit line will provide service to a portion of the city which presently is unserved by rail transit facilities. Not only will all airport user groups benefit from the direct access provided by the extension, but also, significant social and economic benefits will accrue to residents in neighborhoods within the corridor.

The project will require capital assistance under the Urban Mass Transportation Act of 1964, as amended. Assuming the midyear of construction is 1980, the total project cost for the 7.6 mile extension is $152.5 million. The Federal share, calculated at 80% of the total amount, would be about $122 million, which if approved by the Urban Mass Transportation Administration, would probably come largely or totally from Section 3 discretionary capital assistance funds. Construction of the project is scheduled to begin in Fall, 1978 and continue until Fall, 1981.

3. Summary of Effects:

   A. Long-Term Beneficial Effects

      1. The O'Hare Rail Rapid Transit Extension will increase the airport ground access system capacity and increase the Kennedy Expressway Corridor's capacity without increased reliance on the automobile.

2. The extension will benefit various airport user groups: airline passengers, airport employees, and airport visitors, by providing fast, convenient, reliable, and economic rapid transit service to and from the airport. The extension will likewise benefit CBD commuters, reverse commuters, expressway drivers, and the transit dependent through the provision of intermediate stations with park-n-ride facilities.

3. The O'Hare Extension will benefit the economy of the Metropolitan Area by improving the efficiency of the Loop as a transfer point for access to other sections of the City and suburban areas. The extension will maintain the CBD as a highly attractive business area, and will strengthen the area's role as a regional hotel and convention center.

4. The extension will have regional air quality benefits as auto drivers are diverted to rapid transit for trips to and from the CBD.

5. Regional energy consumption efficiency rates for transportation will be improved.

6. The extension will support the development of underutilized land located near intermediate stations.

B. Long-Term Adverse Effects

1. The O'Hare Extension will not be able to meet its operating expenses from farebox revenue. Operational subsidies from the Regional Transportation Authority will be required.

2. The operation of the extension will increase ambient noise levels in areas near the transit stations and surrounding the transit corridor.

3. Patron's access trips to the intermediate stations will increase bus and auto traffic and on-street parking in the areas near station sites and thus increase vehicular emissions and noise.

4. The extension and three intermediate stations will create visual impacts.

5. Existing access points to the Kennedy Expressway at Harlem Avenue, Cumberland Avenue, and Des Plaines River Road will be relocated in order to provide space for transit facilities, thereby creating potential traffic conflicts.

C. Short-Term Effects During Construction

1. Major regional transportation arteries, the Kennedy Expressway and the Northwest Tollway will be affected by lane closures and detours.

2. Construction activity will cause traffic disruption on arterial streets in the vicinity of the Rosemont Yard, and on the overpass bridges at the three intermediate station locations.

3. Unavoidable physical environmental effects as a result of construction activities will include increased noise and vibration levels, exhaust emissions from construction machinery, and construction dirt, dust, and debris.

4. Alternatives:

SCHEME B-1 - THE NO-BUILD ALTERNATIVE

The No-Build Alternative represents the existing operation of CTA Bus Route 40, the O'Hare Express, from the Jefferson Park terminal of the Kennedy Rapid Transit Line to the airport terminals and airport cargo areas and includes all other existing airport access servies.

SCHEME B-2 - MODIFIED NO BUILD

Scheme B-2 is identical to Scheme B-1 except that the cargo area stops at O'Hare are eliminated.

SCHEME B-3 - CTA BUS FROM C&NW

This Scheme provides CTA express bus service from the Park Ridge C&NW commuter station to O'Hare Airport. Buses would use local streets and the Kennedy Expressway to O'Hare, making stops only at the passenger terminals.

SCHEME B-4 - CTA BUS FROM MILWAUKEE ROAD

In this Scheme, CTA bus service to O'Hare is provided from the Franklin Park Station of the Milwaukee Road commuter line.

SCHEME B-5 - EXCLUSIVE BUS LANES

The operational aspects of this Scheme are the same as in Scheme B-1 and B-2, except that buses would use exclusive lanes in the expressway median over most of the distance to the airport. Buses would operate in local traffic in the Jefferson Park area and at the airport.

SCHEME R-1 - CTA RAPID TRANSIT EXTENSION

With this Scheme, the existing CTA Rapid Transit in the median of the Kennedy Expressway would be extended to O'Hare Airport. Four stations would be constructed along the length of the extension - three intermediate stations with adjoining park-n-ride facilities, and a stub end airport terminal station beneath the airport parking garage.

SCHEME R-2 - CTA RAPID TRANSIT EXTENSION WITH NO INTERMEDIATE STATIONS

This Scheme represents identical service characteristics to those in Scheme R-1 except that the three intermediate stations between Jefferson Park and O'Hare Airport are eliminated.

SCHEME R-3 - C&NW SPUR WITH 3 INTERMEDIATE STATIONS

The existing Chicago & Northwestern (C&NW) Commuter Line right-of-way would be used by C&NW trains from the Central Business District (CBD) to Jefferson Park where a spur would connect with the median of the Kennedy Expressway. Trains from the CBD would run non-stop to Jefferson Park, serve the intermediate stations and proceed to the airport.

SCHEME R-4 - MILWAUKEE ROAD - SOO LINE SPUR

This Scheme entails the non-stop operation of Milwaukee Road commuter trains between the CBD and O'Hare using existing Milwaukee Road tracks to the Western suburb of Franklin Park. A spur would be constructed from Franklin Park to O'Hare via right-of-way of the Soo Line Railroad. No intermediate stations would be constructed.

5. Comments on the Draft Environmental Impact Statement were received from the following Federal, state, and local agencies and other sources:

A. U.S. Department of Agriculture, Soil Conservation Service

B. U.S. Department of Housing and Urban Development

C. U.S. Department of the Interior

D. U.S. Department of Transportation, Federal Aviation Administration, Washington, D.C. Office

E. U.S. Department of Transportation, Federal Aviation Administration, Great Lakes Regional Office

F. U.S. Department of Transportation, Federal Highway Administration

G. U.S. Environmental Protection Agency

H. Illinois Department of Transportation, Division of Aeronautics

I. Illinois Department of Transportation, Bureau of Location and Environment

J. Illinois Archeological Survey

K. Illinois Environmental Protection Agency

L. Chicago Area Transportation Study

M. Northeastern Illinois Planning Commission

N. Chicago Transit Authority

O. DuPage County Regional Planning Commission

P. Will County Regional Planning Commission

Q. Chicago Plan Commission

R. City of Chicago, Department of Planning, City and Community Development

S. City of Chicago, Department of Environmental Control

T. Alderman Roman Pucinski

U. DesPlaines Publishing Company

V. Greater North Michigan Avenue Association

W. Norwood Park Citizens Association

X. Norwood Park Chamber of Commerce

Y. Northwest Cumberland Association

Z. Northwest Municipal Conference

AA. Resurrection Hospital

BB. Airport Ground Transportation Association, Inc.

CC. Franz Miller

DD. David O. Taylor

Copies of the Final Environmental Impact Statement have been sent to all agencies, organizations, and individuals who commented on the Draft and to all those on the distribution list for the Draft EIS.

6. Circulation of the Draft Environmental Impact Statement began May 12, 1978 and the Final Environmental Impact Statement is being made available in August, 1978.

REVIEW AND FINDINGS

This Final Environmental Impact Statement represents a detailed statement, as required by Section 14 of the Urban Mass Transportation Act of 1964, on-

(1) the environmental impact of the proposed project,
(2) adverse environmental effects which cannot be avoided should the proposal be implemented,
(3) alternatives to the proposed project, and
(4) irreversible and irretrievable impact on the environment which may be involved in the proposed project should it be implemented.

Based on the information contained in this Environmental Impact Statement and on consideration of the written and oral comments offered on the draft document, the Urban Mass Transportation Administration has determined in accordance with Section 14 of the Act that-

(1) adequate opportunity was afforded for the presentation of views by all parties with a significant economic, social, or environmental interest, and fair consideration has been given to the preservation and enhancement of the environment and to the interest of the community in which the proposed project is located, and
(2) all reasonable steps have been taken to minimize adverse environmental effects of the proposed project and where adverse environmental effects remain, there exists no feasible and prudent alternative to avoid or mitigate such effects.

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I. THE REGIONAL PERSPECTIVE

A. THE REGIONAL SETTING

1. Physical Characteristics

The Chicago region, at the southern end of Lake Michigan, is situated about one-third the distance from the Atlantic to the Pacific coasts and lies in the northern one-third of the nation. Although geographically located in the northeast quadrant of the country, the Chicago area is and has been throughout most of its history the transportation hub of the country. This has resulted from its location at the convergence of the two most important inland waterway systems, the Great Lakes and the Mississippi River, and has spurred its evolution as the national center of both rail and air traffic.

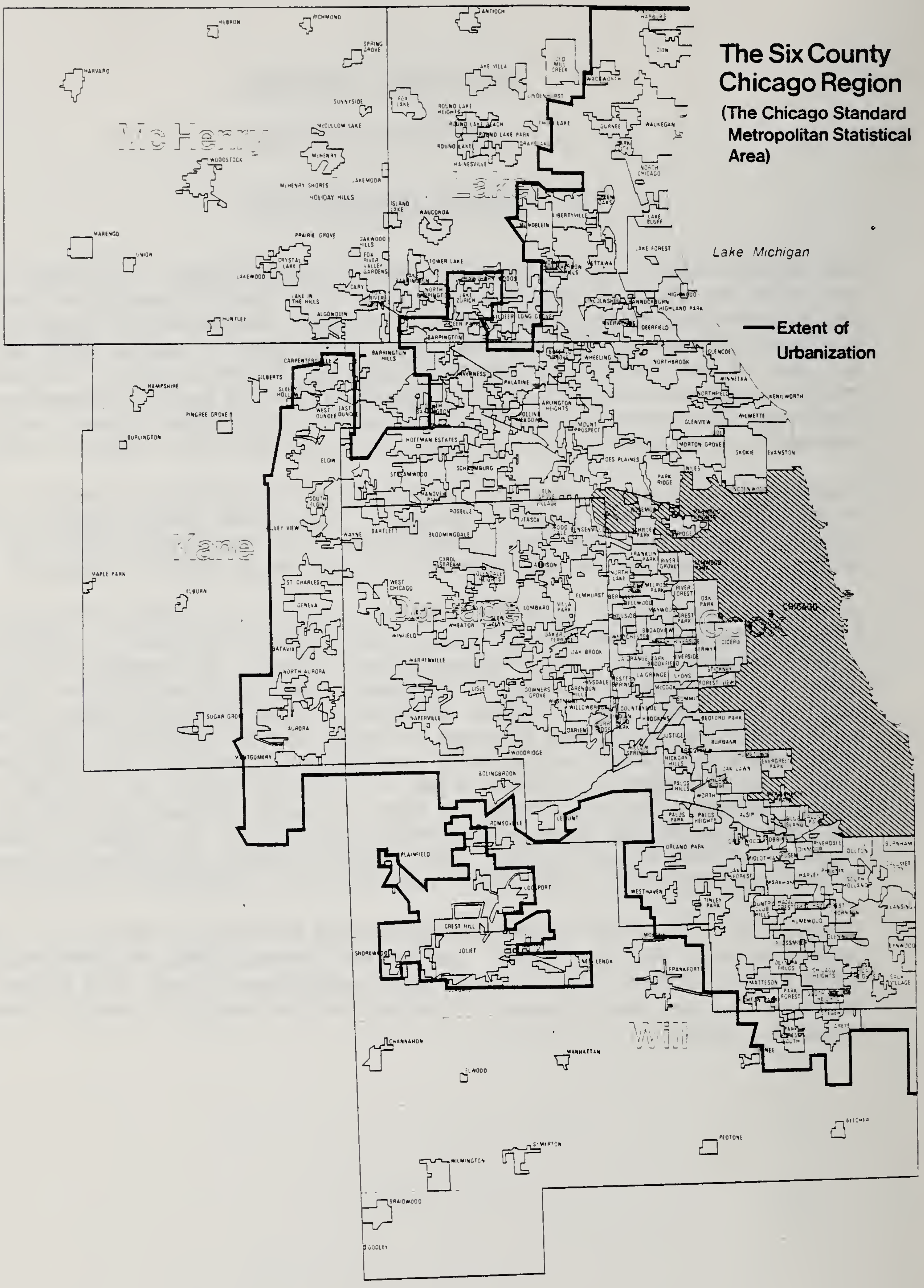
The Chicago area also serves as the commercial and industrial center of the North Central "plains" states. Chicago's history and present status are closely tied to both the agricultural activity of the Great Plains and the natural resources of the North Central States which feed its industry.

Located midway between the Continental Divide and the Atlantic Ocean and some 500 miles north of the Gulf of Mexico, the State of Illinois is reflected in a Continental climate. Cold winters, warm summers, and frequent short fluctuations in temperature, humidity, cloudiness, and wind direction are characteristic. Lacking the protection of natural barriers such as mountain ranges, Illinois experiences the full sweep of winds bringing weather conditions from other areas. Since prevailing winds are westerly and storm systems move from the same directions, the influence of Lake Michigan on Illinois weather, as a whole, is not great. However, the area under the Lake influence includes the Chicago area and other communities where approximately one-half of the State's population lives. The wind blows from the lake toward the shore approximately one-fourth of the time during fall and winter resulting in a moderation of temperature.

The area has an average summer temperature of 72° and an average of 20 days with temperatures of 90°F or higher. During the winter, snows are frequent and temperatures average 29°F but drop below zero several times each winter. Annual rainfall averages approximately 33 inches, while snowfalls annually average about 30 inches.

Figure I-1

MUNICIPALITIES IN NORTHEASTERN ILLINOIS



The Six County Chicago Region

(The Chicago Standard Metropolitan Statistical Area)

Extent of Urbanization

NORTHEASTERN ILLINOIS PLANNING COMMISSION

2. Demographic and Economic Characteristics

The Chicago region is one part of a heavily populated strip along the southwestern shore of Lake Michigan which extends from Milwaukee, Wisconsin to Michigan City, Indiana. The Chicago region which encompasses six counties (See Figure I-1.) accounted for 75% of the South Lake Michigan "megalopolis" population of 9.3 million in 1975. The urbanized area population is 7.0 million.

The Chicago region, itself, is a fair cross-section of the national population. Significant differences do exist, however, among the individual counties, especially between Cook County, which has Chicago as its county seat, and the remaining five counties. Cook County exhibits demographic characteristics more closely associated with contemporary cores of urban regions, such as declining population, greater minority populations, and a greater percentage of rental dwelling units. The remaining five counties are less typical of core cities, having younger populations and showing a strong population growth.

The primary employer in the region is manufacturing, followed by service, retail, and government activities. These four industries account for 75% of the wages and salaries paid in the region. Median family income in the region is higher in every case than the national median.

B. THE TRANSPORTATION NETWORK

1. Historical Development

Chicago developed initially as a port facility at the confluence of the Chicago River and Lake Michigan. The early location of the economic core of the City on the lakefront caused a radial pattern of ground transportation routes to develop outward from this point.

Land use patterns were, and still are, dictated by the location of these transportation routes. Prior to 1920, the railroads and public transit system promoted radiality in land use development as residents located near their means of transportation to work. The dramatic increase in automobile ownership in the 1920's allowed new areas in the suburbs to develop enabling people to live farther and farther from commuter rail terminals. With additions to the roadway system and the advent of expressways, roadways were constructed between the rail lines and the auto became a major commuter mode. The familiar star shaped pattern of settlement was not only extended but began to fill in near the boundaries of the city. Presently, development in the metropolitan area is continuing to expand outward, with the rail line and expressways forming radiating central features around which the densest settlement occurs.

Until the 1860's, waterways and railroads were the dominant components of Chicago's transportation network linking it with other commercial centers. The economic and population boom during this period, however, created the need for an intracity transportation component to carry people to jobs and services in the central area. Mass transit systems were formed and, by 1910, carried 750,000 people to the CBD every day. The popularity of mass transit waned with the increase in the use of private automobiles and massive street improvement programs became necessary during the period following World War II, culminating in the construction of the expressway system in the 1960's.

Chicago's early establishment as a transportation center included air transportation as well as the surface network. Since the 1930's, Chicago has maintained the busiest airport activity in the world with three major functioning fields. O'Hare Airport, which opened in 1955, currently serves most commercial air traffic in the region, although Midway and Meigs Field are still used by smaller aircraft.

2. Current Network Components

The transportation network in the Chicago region provides a variety of means for moving both people and goods. Six major transportation corridors radiate outward from the CBD to connect with the outer portions of the region. They contain four primary types of ground transportation: expressways, commuter rail service, CTA rapid transit, and freight rail lines. Coupled with the facilities for air travel, these components carry the majority of the high-volume traffic in the region.

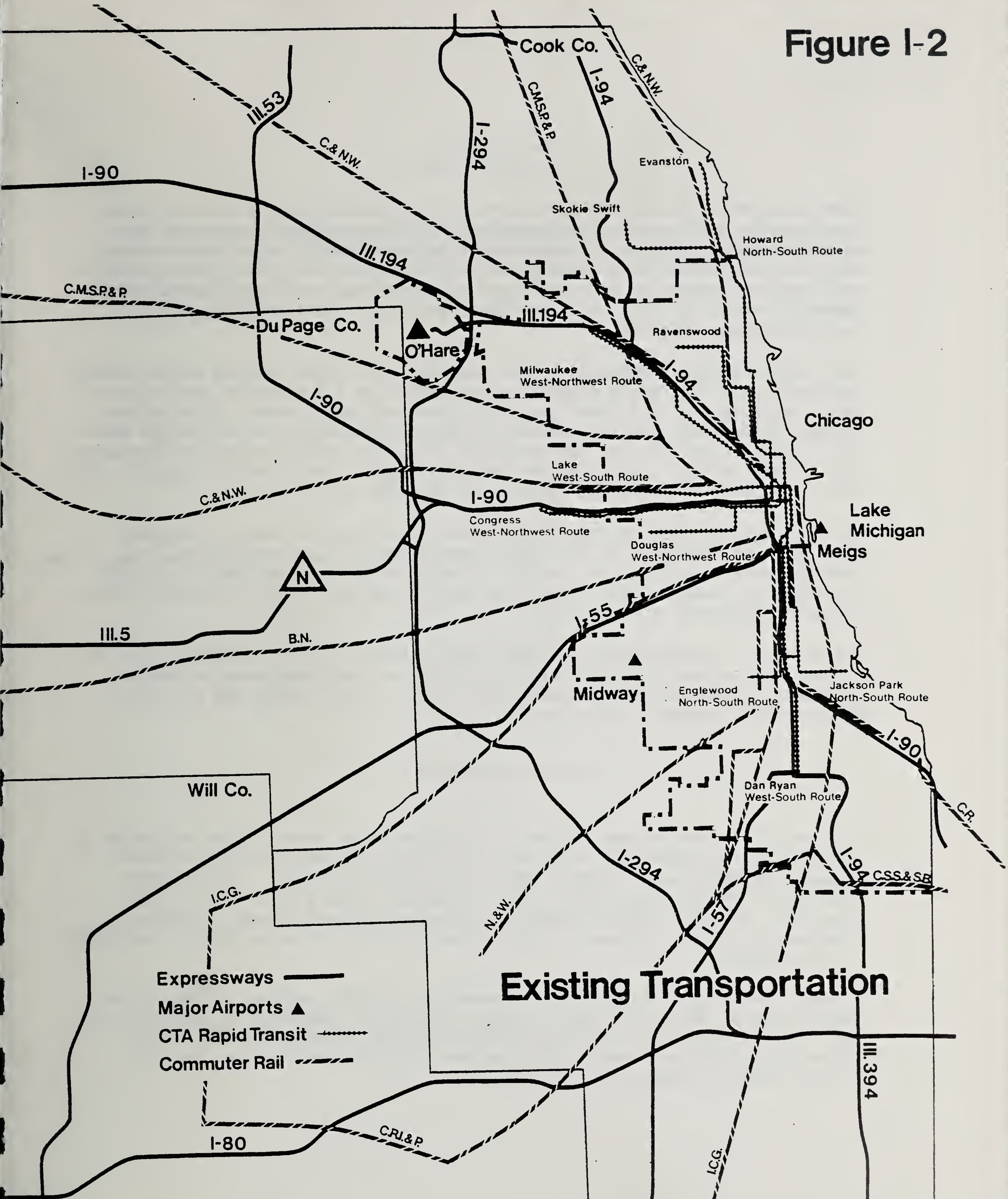
a. Expressways

The expressway system of the six county Chicago region, shown in Figure 1-2, includes some 360 miles of roadway. The expressway network amounts to only about 4% of the region's total highway mileage, but accounts for over 26% of its highway capacity. The importance of this network can be further emphasized by noting that it carries over 34% of the region's motor traffic on an average weekday.

The Chicago area expressway system has two basic functions: combining to form a radial network funneling traffic into and out of the metropolitan area, and providing a circumferential route around the city connecting the radial routes.

The expressway system is essential to both private automobile and commercial traffic. About 90% of all expressway trips are made by auto, while motor freight carriers benefit from the integration of the expressways with the national Interstate highway system. The expressways' capacity and radial geometry contribute to rapid inter and intraurban goods movement. Well over 90% of motor carrier terminals in the region are located in the Chicago Commercial Zone, an area generally bounded on the west and south by the I-294 Tri-State Tollway.

Figure I-2



Existing Transportation

b. Mass Transit

Mass transportation in the Chicago region is provided by rail and bus modes through both public and private carriers, with operations coordinated and supported by the Regional Transportation Authority (RTA). Bus service along arterials within the City operates in a grid pattern to provide local service and transport people to and from rapid transit lines. The rail network is generally radial in form to serve the high-density core focused on the Central Business District.

Rail mass transit is provided by the commuter rail lines and the rapid transit service of the CTA whose systems together provide 516 miles of rail right-of-way. The commuter rail lines use 83% of the rail mass transit right-of-way mileage to provide commuter service to 230,000 passengers on an average weekday. Commuter rail is the dominant mode of public transportation in the outer part of the region, accounting for more than 60% of mass transit travel in that area. Figure I-2 shows the location of commuter rail lines.

CTA rail mass transit service is provided in Chicago and some surrounding suburbs. The intensity of CTA rapid transit use is much greater than that of the commuter rail. With 17% of the rail miles, the CTA provides service to 69% of rail mass transit users, totalling 507,000 per day. The CTA rapid transit system is depicted in Figure I-2.

Bus service is the dominant regional mode of mass transit, accounting for 76% of the total miles of transit service and 68% of the total average weekday ridership. Bus service provided by the CTA, in turn, serves 96% of the 1.7 million daily regional bus patrons.

c. Air Transportation

Air traffic in the Chicago region is accommodated by twenty-eight airfields of various sizes. Commercial airlines are served by three airport's--O'Hare, Midway, and Meigs--all of which are in the City of Chicago. The military also have three air facilities--two in suburban areas plus O'Hare. Non-scheduled general aviation traffic is handled at twenty-three airports in suburban locations. Figure I-2 gives the locations of the major air facilities in the region.

O'Hare International Airport, the largest air traffic complex in the region, handled 24% of the total annual airport operations conducted in the region in 1975 and is currently the busiest commercial air terminal in the world. O'Hare is a vital national facility as well, due to its role as the "hub" of the nation's commercial air carriers.

d. Other Components

Arterials and highways, railroads, and waterways complete the transportation network in the Chicago region, with the latter two modes used primarily for inter-regional goods movement. Chicago functions as a major national center for long-haul rail movements and the region's port facilities are among the most extensive in the country.

II. STUDY AREA DESCRIPTION

A. DEFINITION OF STUDY AREA

The study area for the proposed project encompasses a large portion of the City of Chicago and several of its northwestern suburbs. In total, the study area includes 107.75 square miles, of which 67.25 are located within the City limits of Chicago, with the remaining 40.50 square miles in the suburbs. The project study area is comprised of areas where the primary influences of the O'Hare Extension project will be felt. The specific boundaries of this impact zone include the community areas or census tracts adjacent to each alternative alignment and those areas in which significant travel pattern changes would result under any of the alternatives under study.

For purposes of discussion, the study area was separated into three subareas:

The O'Hare Subarea

Located at the northwest end of the study area, the 50.25 square mile O'Hare Subarea includes 8 suburban communities, O'Hare International Airport, and a 2.75 square mile section of the City of Chicago just east of the airport. The suburbs included are:

- Bensenville
- Elmwood Park
- Des Plaines
- Franklin Park
- Park Ridge
- River Grove
- Rosemont
- Schiller Park

The Chicago Neighborhoods Subarea

Located in the central portion of the study area, the 50 square mile Chicago Neighborhoods Subarea includes two suburbs, both completely encompassed by the Chicago City Limits, and fourteen Chicago Community Areas. Also included are portions of three Community Areas at the southern end of the subarea. Most of the trackage of the existing Kennedy Rapid Transit line is located within this subarea, as is the present terminus station at Jefferson Park. The two suburban communities located within this sub-area are Norridge and Harwood Heights.

The Central Area Subarea

The southeastern portion of the study area is a 7.5 square mile section of the City of Chicago known as the Central Area. Bounded by North Avenue on the north, Ashland Avenue on the west, Lake Michigan on the east, and Roosevelt Road on the south, the Central Area is one of the nation's leading financial, commercial, and cultural centers. In addition, Chicago's Central Area is the transportation hub of the entire metropolitan area with terminal stations for most rapid transit and suburban commuter lines located within, or in close proximity to the Central Business District.

The Study Area and its subareas are delineated in Figure II-1.

B. CHARACTERISTICS OF THE STUDY AREA

1. Land Use Patterns

Land uses within the study area are diverse, ranging from high-intensity commercial development to low-density single-family neighborhoods.

The O'Hare area is generally characterized by low-density residential development, hotel and commercial concentrations, and light industrial uses. Within recent years, the area has experienced a substantial increase in the number of large-scale office and multi-family residential structures.

The predominant land use within the Chicago Neighborhoods area is residential, with the largest proportion of residential uses comprised of low-density development. Industrial and commercial uses are dispersed throughout the area with patterns of development for each following major transportation corridors.

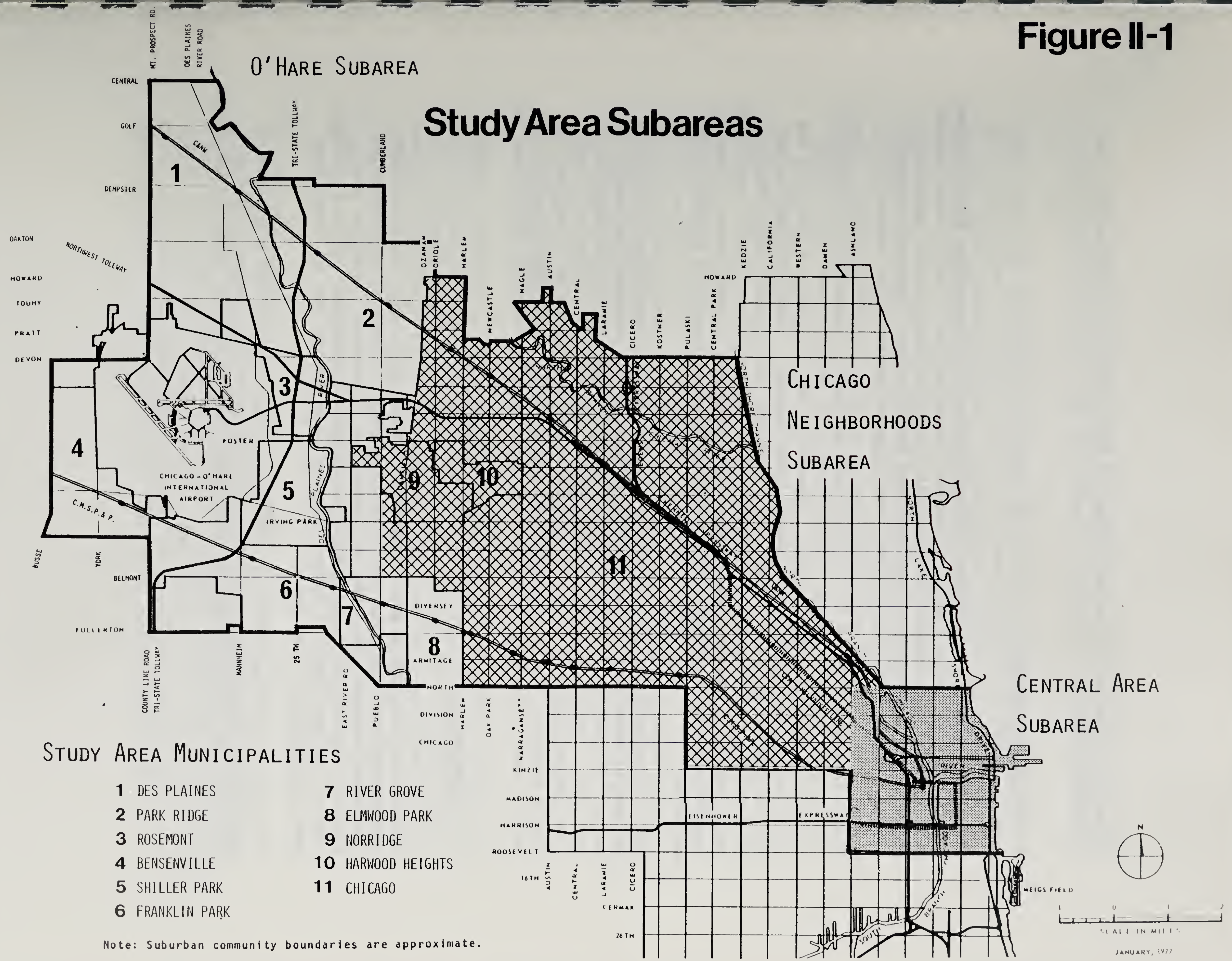
Land uses within the Central Area are diverse and are generally clustered into specific functional areas. The compactness of the Central Area and the interdependence of these functional areas have been key factors in the ongoing viability within and past the Central Area's boundaries.

a. The O'Hare Subarea

The O'Hare Subarea, since the early 1960's, has experienced enormous residential, commercial and industrial development. This recent upsurge in growth is primarily a response to the presence of O'Hare Airport and the convergence in the area of three major highways.

Figure II-1

Study Area Subareas



STUDY AREA MUNICIPALITIES

1 DES PLAINES
2 PARK RIDGE
3 ROSEMONT
4 BENSENVILLE
5 SHILLER PARK
6 FRANKLIN PARK
7 RIVER GROVE
8 ELMWOOD PARK
9 NORRIDGE
10 HARWOOD HEIGHTS
11 CHICAGO

Note: Suburban community boundaries are approximate.

Generally, there are five major uses of land within the O'Hare area, as discussed below.

i. Residential/Hotel

Although residential land use in the O'Hare area is generally characterized by low-density single family residences, numerous multi-family developments have been built in recent years. Multi-family buildings have been constructed in the suburbs of Rosemont and Schiller Park, near the central business district of Des Plaines, and in areas east of the airport.

Hotel accommodations in this subarea are second in number only to those in the Central Area of Chicago. The O'Hare area contains over 6,000 rooms located in seventeen facilities. Generally, major hotels in the area are clustered at two Kennedy Expressway interchanges - Cumberland Avenue and Des Plaines River Road. Motel facilities are also located along Mannheim Road north of the Kennedy Expressway. The remaining hotel/motel facilities are dispersed throughout the subarea. The large 915 room O'Hare Hilton is located adjacent to the passenger terminals and the parking garage at the Airport.

With an expanding hotel market, the O'Hare area has developed into one of the major convention and exposition centers in the metropolitan area. Several convention facilities are currently in operation or planned for the area. The 205,000 square foot O'Hare International Trade and Exposition Center opened in 1976. A smaller convention facility is located two blocks south of the Expo-center. Opened in 1975, the O'Hare International Hall is part of a 400,000 square foot hotel complex operated by Holiday Inn.

ii. Commercial

Since 1960, the O'Hare area has experienced significant office building construction. Stimulated by the development of O'Hare Airport and the expressway network, the area has developed into one of the major employment centers in the metropolitan region. Forty-eight office buildings with a combined total of almost three million square feet of space have been constructed since 1960.

The majority of new office structures have been constructed along either the Kennedy Expressway, the Tri-State Tollway or the Northwest Tollway. Although the larger structures are generally clustered at major highway interchanges, most of the smaller buildings in the area have been constructed along the major arterial streets in Rosemont, Des Plaines, and Park Ridge.

Retail uses are dispersed throughout the O'Hare area in strip development along major arterial streets, and in clustered suburban districts. Two of the largest clustered retail districts are located in the suburbs of Des Plaines and Park Ridge, both north of O'Hare.

Des Plaines recently embarked on a multi-million dollar renewal project which will eventually add approximately 200,000 square feet of office and 150,000 square feet of retail space to the downtown area. Although no major shopping center is located in the O'Hare area, several large shopping centers are located in close proximity.

iii. Industrial

Three major industrial concentrations exist in the O'Hare area. The oldest concentration is located around the Bensenville and Godfrey Yards of the Milwaukee Road Railroad. A second industrial concentration is located north of the Airport in Des Plaines, in the vicinity of the Oakton Street and Mt. Prospect Road intersection. A third industrial area is located in an area of Schiller Park and Franklin Park bounded by 25th Avenue, Irving Park Road, Des Plaines River Road, and Armitage Avenue.

iv. Recreational

Numerous recreational amenities are located within the O'Hare subarea, the largest of which is a portion of the 3200 acre forest preserve division which encompasses the flood plain of the Des Plaines River between Touhy Avenue in Park Ridge and Madison Street, south of the study area. This division of the Cook County Forest Preserve system is part of the 64,800 acre network of regionally important open space dispersed throughout the county. Smaller, local parks and recreation facilities are situated throughout this section of Chicago and the suburban communities.

v. Transportation

Transportation facilities are a major land use component in the O'Hare area. O'Hare, the world's busiest airport, is located on a 6600 acre tract approximately 17 miles from Chicago's Central Business District. In addition to the three main passenger terminals, uses of land at O'Hare include a 8800 vehicle parking garage, a 915 room hotel, and cargo and storage facilities.

The Airport is served by a network of highways which converge two miles to the east within the suburb of Rosemont. The John F. Kennedy Expressway and the Tri-State and Northwest Tollways provide a high level of accessibility to areas east, north, south, and northwest of the Airport.

b. Chicago Neighborhoods Subarea

The central portion of the Study Area is comprised of the northwest section of the City of Chicago and two suburbs - both encompassed by the Chicago city limits. The area is generally bounded on the north by the city limits, on the east by the North Branch of the Chicago River and Ashland Avenue, on the west by the O'Hare Area, and on the south by Lake Street between Ashland and Pulaski Avenues and North Avenue between Pulaski and Harlem Avenues. The predominant use of land in the area is residential. The two suburban communities, Norridge and Harwood Heights, both maintain land use characteristics similar to the adjacent sections of Chicago. The four major land uses in the Chicago Neighborhoods Area are discussed below.

i. Residential

The predominant land use within the Chicago Neighborhoods area is residential. The housing in the area is low-density with a high proportion of single-family homes and duplexes.

ii. Retail

Retail uses in the Chicago Neighborhoods area generally follow the city-wide pattern of commercial strips along arterial streets, with large concentrations at many of the major intersections.

Two shopping centers are located in the area. The Brickyard Shopping Center at Diversey and Narragansett recently opened, and an auto oriented shopping center is located at the intersection of Harlem Avenue and Irving Park Road in Norridge.

iii. Industrial

Industrial uses are dispersed throughout this subarea. Major concentrations of industrial uses generally follow linear patterns adjacent to major transportation arteries.

iv. Recreational

Although recreational facilities comprise only a small percentage of the total land acreage in the Chicago Neighborhoods Area, the influence they exert on the surrounding neighborhoods is significant. A large portion of Chicago's extensive park and boulevard network is located within this subarea. Parks include the 206 acre Humbolt Park and several neighborhood parks adjacent to the North branch of the Chicago River. The remaining park acreage is scattered throughout the area in small neighborhood parks.

c. Central Subarea

The 7.5 square mile Central Area comprises roughly 3.3 percent of the total land area of the City of Chicago. According to the 1970 U.S. census, 115,923 residents live within the boundaries of the area. Although compact in size, the Central Area is the economic, cultural, and entertainment center of the entire Chicago Metropolitan Region. The Central Area is bounded by North Avenue on the north, Ashland Avenue on the west, Roosevelt Road on the south, and Lake Michigan on the east.

There are four general land uses within the Central Area boundaries, as discussed below.

i. Residential/Hotel

The majority of residential uses are clustered in four separate locations near the boundaries of this subarea. Since 1960, over eleven thousand high-rise residential units have been constructed in the Central Area of Chicago. Most are located north of the Chicago River near Lake Michigan. The Cabrini-Green development, located in the northwest part of this subarea, is a large scale public housing project with a mixture of high and mid-rise buildings. The residential neighborhoods in the western sections of the Central Area are generally low-density, with some recent multi-family development construction.

Chicago's Central Area has developed one of the nation's strongest hotel markets - particularly in support of its role as a major convention center. Within the Central Area, there are currently 24,885 hotel/motel rooms available. Six hotels are located in the South Michigan Avenue area. These hotels, with over 4000 rooms, exhibition and convention facilities, and in close proximity to McCormick Place, are an important asset in the City's ability to accommodate major conventions and trade shows. An area which has experienced much development activity since 1970 is north of the Chicago River along Michigan Avenue. Since 1970, 4,268 new hotel rooms have been added to the Central Area hotel market, representing a 20% increase. Of the 9 new facilities, 6 are located in the North Michigan Avenue area.

ii. Commercial (Office/Retail)

The viability of Chicago's Central Area is evidenced by the recent boom in commercial office construction. Approximately 50% of the existing 70 million square feet of office space was constructed during the seventeen year period from 1960 to 1977. The total number of retail establishments within the Central Area has been on the decline since 1960. The major retail concentration in the subarea is located along a nine block section of State Street within the Central Business District, with a second major retail district located along North Michigan Avenue. Several smaller retail areas are located in the Central Area neighborhoods.

iii. Recreational/Public

The Lakefront is regarded as Chicago's greatest recreational asset. Located within the three contiguous miles of lakefront in the Central Area are public beaches, athletic fields, bicycle paths, tennis courts, and picnic areas. Grant Park, known as Chicago's front-yard, is a 305 acre expanse of lakefront parkland containing Buckingham Fountain and the Art Institute of Chicago.

Several educational facilities are located in the Central Area including the University of Illinois-Chicago Campus, Roosevelt University, Columbia College, Northwestern University, DePaul University, Loyola University, and the Loop College. A medical complex in the northern portions of the area includes the Northwestern University Medical School, Passavant Hospital, Prentice Hospital, Wesley Memorial Hospital, and the Veterans Administration Hospital. Several of the hospitals have recently embarked on large-scale expansion programs.

iv. Industrial/Railroad

Industrial/railroad facilities represent the largest single use of land in the Central Area with combined acreage exceeding 1800 acres. Industrial uses, currently occupying approximately 1270 acres, are gradually diminishing in the CBD area, but are still relatively entrenched along the Chicago River. Railroad yards, occupying approximately 550 acres, are located in areas to the south of the CBD, along the Chicago River, and adjacent to the lakefront parkland.

2. Social and Economic Characteristics

The population of the study area includes more than 1 million people, or approximately 14% of the SMSA's population. This area represents a cross-section of metropolitan social and economic conditions, ranging from the wealthy lakefront area to older, ethnic neighborhoods, to areas housing recent immigrants, to rapidly growing suburban communities. Due to the size and scope of the study area, it is discussed in terms of its three subareas: the O'Hare area, the Chicago Neighborhoods, and the Central Area. Most information is from the 1970 census.

The O'Hare Subarea includes one Community Area in Chicago plus eight suburbs. In general, this area has experienced a great deal of growth since 1960, in population, housing, and industry. Approximately 180,000 people inhabit this portion of the study area. The population is predominantly white, with a high proportion of family unit households. Seven percent of the population is age 65 or over. White collar occupations are held by a majority of the labor force and the median family income in the area is above $12,000.

Most of the residents of the O'Hare Subarea occupy single family dwellings constructed in the last 25 years and, at the time of the census, had lived there for at least 4 years. The automobile accounts for nearly 80% of the work trips originated in the subarea.

The Chicago Neighborhoods Subarea has a population of nearly 750,000 persons and includes 17 Community Areas and 2 suburbs. In terms of the social and economic indicators examined, this subarea is very diverse. The eastern segment houses a high proportion of foreign stock residents, with Poles, Germans, Italians, and Latinos being the predominant groups. Median school years completed by adults ranges from 8 to 12.6 and median family income ranges from $8,000 to nearly $17,000. Twelve percent of the people in the Chicago Neighborhoods Subarea are 65 years of age or older.

The housing stock consists primarily of structures with fewer than 5 units, constructed prior to 1950. Single family dwellings predominate in the northwestern portion of this subarea which is also where the highest proportion of owner occupied units is found. The majority of residents in the subarea had lived in the same unit for 4 or more years at the time of the census. Driving is the most common means used by the labor force for work trips, while public transit accounts for almost one-third of the total trips.

The Central Area Subarea has the highest density of the three subareas, with a population of approximately 116,000. Thirty percent of the population is black, 12% is Spanish speaking, and 10% are elderly. The Loop and Near North Side have a high proportion of individual households, white collar workers, and high-rise housing structures. The median number of school years completed by adults is greater than 12 and the median family income is among the highest in the study area. West Town and the Near West Side, in contrast, have a large proportion of family unit households, relatively few adults who have completed high school, a high percentage of blue collar and labor workers, and median family income of less than $8,100.

Much of the housing stock in the Loop and Near North Side is high-rise and has been constructed since 1950. Two to nine unit structures comprise the majority of the housing stock in West Town and the Near West Side, most of which are at least 25 years old. Fewer than half of the residents in the Central Area occupied the same house in 1970 as they had in 1965, and between 25%-30% of the residents in 1970 had not lived in the SMSA in 1965.

Most workers in the Loop and Near North Side either use public transit or walk to their place of work, while in the Near West Side and West Town, the automobile accounts for approximately 45% of work trips, which is slightly more than the number made on public transit modes.

C. EXISTING TRANSPORTATION FACILITIES

1. Commuting Facilities

a. Expressways

Express roadways are the major arteries for the auto commuter driving to the CBD and for the reverse-commuter driving to industrial and commercial complexes in the northwest suburban area. Three major express roadways serve the study area, the Northwest Tollway, the Tri-State Tollway, and the John F. Kennedy Expressway.

The Northwest Tollway lies in the far northwest section of the study area and runs in a northwest-southeast direction. Only the southeast segment of the tollway lies within the boundaries of the study area, skirting the northern boundary of O'Hare Airport. The facility primarily serves areas west of the study area.

The Northwest Tollway interchanges with the Tri-State Tollway and merges with the Kennedy Expressway about two miles east of O'Hare. Daily traffic volumes on the tollway during 1976 averaged about 92,000 vehicles, measured at the point where the tollway crosses the study area boundary, just north of the airport. These 92,000 vehicles were equally split between vehicles leaving and vehicles entering the study area.

The Tri-State Tollway is a bypass route around the City of Chicago. Separating from Interstate 94 south of the City of Chicago, the tollway passes to the west of the City and rejoins Interstate 94 at the Cook County-Lake County border. The Tri-State runs generally north-south through the study area, lying to the east of O'Hare Airport. Four interchanges are located within the study area, including those with the Northwest Tollway and the Kennedy Expressway. Daily traffic volumes on the Tri-State vary from about 93,000 vehicles in the southern part of the study area to 42,000 vehicles at the study area's northern border.

The Kennedy Expressway is the main express artery in the project study area. Running on a northwest-southeast alignment, its termini are O'Hare Airport on the northwest and the Kennedy-Eisenhower-Dan Ryan expressway interchange on the southeast. Along the route from the airport to the Central Area, the Kennedy merges with two express roadways, the Northwest Tollway and the Edens Expressway. At both points, average daily traffic significantly increases, from 93,000 to 170,000 at the Northwest Tollway merger, and from about 135,000 to 240,000 after Edens Expressway traffic merges from the north. From the Edens junction to the CBD, traffic volumes are consistently in excess to 200,000 vehicles/day. In fact, in 1973 this 8½ mile segment of the Kennedy Expressway included 4 of the 16 most heavily travelled miles on the entire interstate highway system. (See Figure II-2.)

b. Chicago Transit Authority

The Chicago Transit Authority (CTA) has been the sole owner and operator of the local transit system since 1952. It is today, by far, the largest public transportation carrier in the region, operating eight rapid transit routes with about 90 route miles and 133 bus routes in its service area.

CTA rapid transit service extends to the south, west, northwest and north sections of Chicago with additional service provided to suburbs beyond the western and northern city limits. Rapid transit service in the study area is provided by the Central Business District (CBD) Service and the northwest leg of the West-Northwest rapid transit route. From the CBD, the northwest leg, or Milwaukee Line, runs northwest for about 9 miles to the Jefferson Park terminal. (To simplify matters, from here on CBD service will be considered part of the Milwaukee Line.) The final 5.2 miles of the Milwaukee Line from Logan Square to Jefferson Park began operation in 1970 and includes about 3.7 route miles in the Kennedy Expressway median. Eighteen of the 42 West-Northwest route stations are included on the Milwaukee Line.

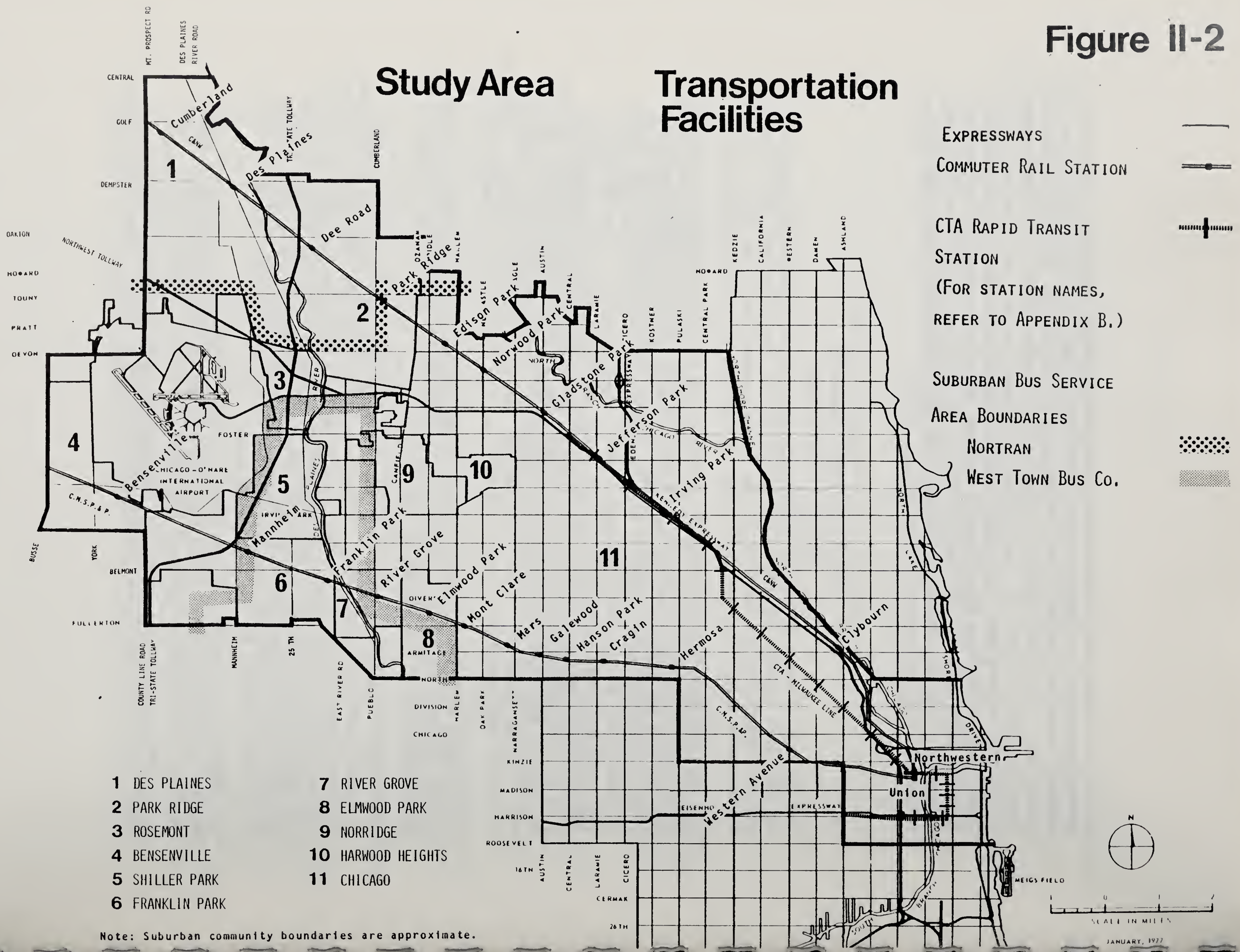
The weekday entering passenger volume at Milwaukee Line stations is 98,050, or 67% of the West-Northwest route's total, and 19% of the CTA Rapid Transit System total entering volume of 507,300.

The CTA operates bus service over 133 routes within both the City of Chicago and some surrounding suburbs. These bus routes have been designed around the Chicago street system which forms a grid network with few diagonal or radial routes. Most of the routes not operating to the CBD provide north-south or east-west service, interfacing with other bus lines and rail routes. Thus, the CTA system offers many transfer opportunities enabling riders to reach almost any destination in the city.

Most CBD bound CTA bus patrons in the northwest Chicago area use the bus routes for access to the Milwaukee Line of the rapid transit system. Two recently constructed Milwaukee Line stations, Logan Square and Jefferson Park, have bus terminal areas and consequently are served by more bus routes than the grid street pattern would normally allow. Four routes serve

Figure II-2

Study Area Transportation Facilities



EXPRESSWAYS

COMMUTER RAIL STATION

CTA RAPID TRANSIT STATION (FOR STATION NAMES, REFER TO APPENDIX B.)

SUBURBAN BUS SERVICE AREA BOUNDARIES

NORTRAN

WEST TOWN BUS CO.

1 DES PLAINES
2 PARK RIDGE
3 ROSEMONT
4 BENSENVILLE
5 SHILLER PARK
6 FRANKLIN PARK
7 RIVER GROVE
8 ELMWOOD PARK
9 NORRIDGE
10 HARWOOD HEIGHTS
11 CHICAGO

Note: Suburban community boundaries are approximate.

the Logan Square terminal directly, and eleven bus routes terminate at the Jefferson Park station, providing feeder/distributor service to the far northwest section of Chicago. In addition, the Jefferson Park terminal is served by five suburban bus routes extending into near northwest suburban communities, the Chicago and Northwestern's Northwest commuter rail line, and twelve Greyhound interurban bus routes.

CTA buses also serve stations on the study area's two commuter rail lines. CTA routes connect with seven C&NW stations other than Jefferson Park: Park Ridge, Edison Park, Norwood Park, Gladstone Park, Irving Park, Clybourn, and Northwestern Station in the CBD. The CTA serves six Milwaukee Road West Line stations: Mont Clare, Galewood, Hanson Park, Cragin, Western Avenue, and Union Station in the CBD. CTA service is most extensive at the CBD stations of each commuter line to meet downtown distribution demands.

c. Commuter Railroads

The Chicago and Northwestern Transportation Company (C&NW) is one of two commuter railroads providing service to the study area. Serving the Chicago region since the mid 1800's, the C&NW is currently the region's largest commuter railroad in terms of track miles, ridership, and revenue. C&NW commuter service extends north, west and northwest on three lines from the Central Area to outlying suburban communities.

Service to the study area is provided on the C&NW Northwest Line, the largest of the three C&NW commuter lines. Eleven of the twenty-eight Northwest Line stations lie within the study area. The study area segment of the Northwest Line accounts for 31% of the line's 19,000 average weekday inbound trips and 14% of such trips on the C&NW system as a whole.

Over 70% of the study area ridership originates at the four stations beyond the Chicago city limits, i.e., the Park Ridge, Dee Road, Des Plaines, and Cumberland Stations. The Park Ridge and Des Plaines stations have the highest ridership and the most extensive suburban bus service.

The Chicago, Milwaukee, St. Paul and Pacific Railroad Company (the Milwaukee Road) is the second commuter railroad operating in the study area. Operating in the region since the 1870's, the Milwaukee Road provides commuter service on two lines running north and generally west from the Central Area. Commuter service in the study area is provided on the Milwaukee Road West Line, which is shorter but which carries more passengers than the Milwaukee Road's North Line. Of the twenty-one stations on the West Line, thirteen lie within the study area.

The stations located within the study area account for 36% of the West Line's 8400 inbound trips on an average weekday, and 19% of such trips on the Milwaukee Road commuter system. A short segment of the Milwaukee Road North Line passes through the study area. The four stations on this segment account for only 3% of the total Milwaukee Road inbound traffic. Since the North Line does not provide a significant service within the study area, discussion of Milwaukee Road service will concentrate on the West Line.

d. Suburban Buses

Nortran operates bus routes in Chicago's north and northwest suburbs, concentrated in the suburban communities of Des Plaines, Park Ridge, and Niles. Nortran service also extends into Lake County on the north and to Evanston on the east.

Nortran provides three services to CBD commuters: direct service to the Central Area, connection with stations on the Chicago and Northwestern Northwest Line, and connection to the CTA rapid transit system. The bulk of these services is provided by connection to the two rail systems since the Nortran bus trip to the CBD is relatively time consuming.

Within the study area, Nortran bus routes serve four C&NW commuter line stations: Park Ridge, Dee Road, Des Plaines, and Cumberland. Service to the Des Plaines station is more extensive than to any other, with eleven routes covering the township of Des Plaines and extending into mostly unincorporated areas to the east. The areas adjacent to the Park Ridge and Cumberland stations interface with two routes. Five Nortran routes extend to the Jefferson Park CTA rapid transit terminal within the Chicago City limits. Three of these provide bus service within the study area, north of the CTA service area.

The West Town Bus Company operates its transit service in suburban communities west of Chicago, generally from Schiller Park on the north to Summit on the south. Although West Town service is concentrated in suburbs south of the study area, some services are provided to study area commuters.

West Town bus routes provide a bus/transit connection at five Milwaukee Road West Line commuter rail stations, namely: Mont Clare, Elmwood Park, River Grove, Franklin Park, and Mannheim. Service is provided by, at most, two routes at any station. In addition, West Town operates a bus route to the Park Ridge station of the C&NW Northwest Line. West Town provides no service to Jefferson Park or any other CTA rapid transit station within the study area.

Two dial-a-bus companies operate demand responsive transit services in the suburban study area. The Our Town Bus Company operates in Elmwood Park and could provide service to the Milwaukee Road West Line Elmwood Park Station.

The second is operated by the Village of Bensenville and likewise could serve the Bensenville station on the Milwaukee Road West Line. It should be noted, however, that neither dial-a-bus service relies on CBD commuter train traffic for a substantial portion of its ridership.

It should also be noted that after July, 1977, the Bensenville Dial-a-Bus will operate on specific routes during peak hours.

2. O'Hare Airport Access Facilities

a. Expressways

At present, ground access to the O'Hare Airport passenger terminals is available by motor vehicle primarily via the Kennedy Expressway. The last segment of the expressway is the O'Hare Access Road which ends at the O'Hare passenger terminals. Since the Kennedy Expressway provides the direct access to the airport terminals, it is the route used for nearly all airport trips. The Kennedy is especially suited for the CBD-O'Hare Airport trip as these two points are the expressway's termini. At present, the airport approach section of the Kennedy Expressway carries a weekday volume of 71,800 vehicles.

The greatest problems in use of the Kennedy for airport access are that it is also a primary commuter route and that the period of peak demand for airport access coincides with a period of peak commuter demand. For example, traffic counts taken on May 13, 1977 indicate that during the four hours between 3 P.M. and 7 P.M., traffic on the Kennedy at a point eight miles east of the airport accounted for 25% of the daily volume; while on the O'Hare access section of the expressway, traffic accounted for 30% of the daily volume during this same period. As a result, total demand for travel often results in a low level of service on the expressway and extremely long travel times for both airport access and commuter trips.

b. CTA Buses and Trains

Access to O'Hare Airport via the CTA can be made on the #40 O'Hare Express bus. This route makes a round trip to the airport from the Jefferson Park terminal with stops at the three airport terminals and at the commercial sections of the airport.

Since the O'Hare Express bus operates from Jefferson Park, transfer can be made directly from the CTA Milwaukee rapid transit line or any of the other ten bus routes operating to Jefferson Park. Less direct service is provided to the remaining parts of the CTA public transit system via transfers to rapid transit or bus routes terminating at Jefferson Park.

Since the Jefferson Park terminal also houses a C&NW commuter rail station, transfer can also be made from the C&NW Northwest Line to the O'Hare Express bus for airport access.

c. Suburban Buses

Nortran operates one bus route to the O'Hare Airport passenger terminals. This route, Route 220, begins in Glenview, travels through Des Plaines and Rosemont and then to the airport. Along the route, Nortran serves the Des Plaines station of the C&NW Northwest Line providing access to O'Hare via the C&NW. Transfer within the Nortran transit network would allow airport access from most suburbs in the Nortran service area. About 300 passengers use the Nortran service on an average weekday.

The West Town Bus Company also operates one route to O'Hare Airport. This route, Route 330, serves the passenger terminals and extends directly south from the airport. Route 330 serves the Mannheim station of the Milwaukee Road West Line, thereby permitting access to O'Hare via the commuter rail line. Internal transfer would allow airport access from all parts of the West Town service area.

It should be noted that although commuter rail connections with CTA and suburban bus lines permit access from the CBD to O'Hare via either the C&NW or Milwaukee Road, these routings are rarely used.

d. Taxis

Taxi service to O'Hare Airport is the most flexible of all public transportation options. The service is available anywhere in the study area on a demand responsive, door-to-door basis. The taxi trip from the CBD to the airport is very common and has been estimated to account for 42% of all CBD-O'Hare business trips. Such trips are made via the Kennedy Expressway directly to the passenger terminals.

e. Continental Air Transport

Continental Air Transport provides a scheduled airport bus service between O'Hare Airport and seventeen major hotels and the Sears Tower in the Central Area. The airport bus service accommodates 4500 passengers per day, including about 43% of all CBD-O'Hare business trips. After pickups at the various Central Area stops, the airport bus uses the Kennedy Expressway for airport access. Continental Air Transport operates the only such service from the CBD to O'Hare Airport.

3. Demand Projections

a. Commuter Demand

The recent history of commuter travel in the Kennedy Expressway Corridor, which includes the CTA Milwaukee rapid transit line, the Kennedy Expressway and the Northwest Tollway, indicates a general increase in trip volumes. Commuter travel increases, however, have been limited to the highway elements of the corridor and have been greater in the outer sections than in areas proximate to the CBD. The rail mode has shown a relatively steady patronage during this period. Total person trip estimates indicate further increases in commuter travel demand in the Northwest Corridor between 1976 and 1985. These increases will largely occur during peak travel periods as both inbound and outbound commuting increase.

The capacity of the highway mode to accept further travel increases, especially during peak hours, is limited at best. Traffic counts taken on Thursday, May 12, 1977 at four locations on the Kennedy Expressway - two between the Northwest Tollway merger and the Edens junction, and two just north of the CBD-indicate the extent of the problem. At the two northwest count stations, the expressway operated at level of service "E", unstable flow, in both directions during both peak periods. At the two near north count stations, the capacity was reached again, and often exceeded in both directions during both peak periods.

Projected increases in commuter trip demand between 1976 and 1985 generally run about 4% in the Kennedy Corridor. As it is evident that the Kennedy Expressway, especially its far northwest segments, is unable to cope with existing travel demand, the introduction of another travel mode into the northwest sections of the Kennedy Corridor is necessary to satisfy demand increases. It has been estimated that a non-automobile commuter mode in the Kennedy Corridor would satisfy a 1985 commuter travel demand of 11,800 trips per day.

b. O'Hare Access Demands

The anticipated level of activity at O'Hare Airport in 1985, 30 million enplanements per year, will significantly increase the demand for airport access and egress. Estimates indicate that the 1976 demand, 172,500 weekday person trips, will increase to 248,900 person trips on an average weekday in 1985. Total trips for 1976 and 1985 are broken down by source in the following table.

TABLE II-1

O'HARE GROUND ACCESS DEMAND

SOURCE	1976 PERSON TRIPS	1985 PERSON TRIPS
Passengers	60,400	90,500
Employees	33,000	40,000
Visitors	51,900	77,800
Residual Users	27,200	40,600
TOTAL	172,500	248,900

Modal distribution figures for 1969 and 1977 are given below.

TABLE II-2

GROUND TRANSPORTATION MODAL SPLIT

MODE	PERCENTAGE DISTRIBUTION	
	1969*	1977
Private Car	56.6	63.0
Rental Car	6.0	6.8
Taxi	14.1	10.7
Limousine/Coach	13.8	14.0
Other, or Not Indicated	9.5	5.5
	100.0	100.0

*1969 figures are for departing air passengers only.

Satisfying the existing airport ground access demand is compounded by severe capacity constraints on the primary ground access route, the Kennedy Expressway, and on the airport circulation roadways.

The peak periods of airport access demand correspond to the peak traffic periods on the Kennedy Expressway, 7 a.m. to 9 a.m. and 4 p.m. to 7 p.m. Access to the airport during morning peak moves outbound in the counter-rush direction. At this time, levels of service on segments of the outbound Kennedy are below the "C", or adequate, level. During the evening airport access peak, near north segments of the outbound Kennedy Expressway operate at "E" or "F" levels of service, indicating a service breakdown.

Peak hour volumes generally exceed the capacity of both the upper and lower level airport terminal roadways, used by departing and arriving passengers, respectively. The demand for curb unloading space on the upper level and for curb loading space on the lower level results in frequent double parking and, subsequently, breakdown of service, i.e., level of service "F", on both terminal roadways.

The above mentioned problems result from existing ground traffic demand over the primary airport ground access route. Unless some changes are made in the modal distribution for airport access and egress, the 1985 ground traffic demand will exacerbate existing access problems to the point that the airport ground access system will be wholly unable to satisfy the demands placed on it.

D. EXISTING ENVIRONMENTAL CONDITIONS

1. Air Quality

a. Monitoring Programs and Agencies

The Chicago metropolitan area is an Air Quality Control Region as defined by the U.S. Environmental Protection Agency. It became subject to a federally promulgated Transportation Control Plan (TCP) on December 5, 1973. This plan utilizes three control strategies for reducing vehicular air pollutant emissions to ensure attainment of the national primary ambient air quality standards. The strategies include:

- traffic flow management in the CBD via a computerized signalization system;
- parking restrictions on selected CBD streets;
- county-wide vehicle emission inspection.

US EPA monitors TCP program results through its Continuous Air Monitoring Program (CAMP) station in Chicago's CBD. Ambient air quality is also monitored by a network of stations operated by the Illinois EPA, Cook County Department of Environmental Control and Chicago Department of Environmental Control (DEC). Stations of the latter two agencies provide the most comprehensive data for the study area. In particular, Chicago DEC monitoring sites from the 20 station Chicago Air Sampling Network and the 8 station Telemetered Air Monitoring Network provide extensive data on nitrogen oxides, sulfur oxides, particulates, and carbon monoxide levels throughout the City. The Chicago DEC also maintains a detailed pollution emission inventory. Mobile and stationary source emssions are summarized on a square mile basis. Information at this level of detail is not available for much of the surrounding suburban area.

b. Major Sources of Pollutants

There are five primary pollutants commonly found in the urban atmosphere:

Carbon Monoxide	(CO)
Hydrocarbons	(HC)
Particulate materials	(PM)
Nitrogen Oxides	(NO_x)
Sulfur Oxides	(SO_x)

These contaminants are emitted from sources associated with activities such as transportation, fuel burning (stationary sources), industrial processes and solid waste disposal.

Pollution source characteristics vary geographically over the project study area. Four recognizable but not mutually exclusive sectors can be identified. These are the Chicago Central Business District, the Kennedy Corridor, the O'Hare Area and the Chicago Neighborhoods. In the tables below, mobile and stationary source emissions for 1975, the most recent complete data, are presented for each subsector and for the whole study area.

TABLE II-3

AIR POLLUTANT EMISSIONS
TONS/YEAR 1975

	SOURCE	CBD	CHICAGO NEIGHBORHOODS	O'HARE AREA*	STUDY AREA TOTAL	KENNEDY CORRIDOR**	AIRCRAFT
MOBILE	CO	28,200	74,900	22,300	125,400	31,900	3800
	HC	3900	10,300	3050	17,250	4000	1700
	NO_x	4300	11,400	3400	19,100	8900	1800
	PM	420	1100	320	1840	470	100
	SO_x	180	470	140	790	200	170
STATIONARY	CO	460	555	65	1080	70	-
	HC	860	1450	365	2675	390	-
	NO_x	3540	4460	490	8490	1520	-
	PM	2165	2610	295	5070	800	-
	SO_x	7945	7075	380	15,400	2655	-

*does not include aircraft emissions

**includes those square mile sections through which the Kennedy Expressway passes

On a simple mass basis, mobile emission sources account for most of the total pollutant burden. However, consideration of pollutants and sources solely on a mass basis fails to consider the relative harmfulness and concentration of the materials. Relative tolerence weighting factors have been developed based on air quality standards. By applying the factors to gross emission data, an adjusted mass value is derived. The adjusted mass values are then distributed over their respective geographic areas on a square mile basis and used to qualitatively compare the seriousness of pollutant sources.

TABLE II-4

STUDY AREA TOTAL
ADJUSTED POLLUTANT MASS VALUE
PER SQUARE MILE

SOURCE	CO	HC	SO_X	NO_X	PM	TOTAL
MOBILE	1170	4581	518	9696	915	16880
AIRCRAFT	37	104	2389	1102	383	4015
STATIONARY	1010 (EST)	715	10100	4306	2522	18653

POLLUTANT	RELATIVE TOLERANCE FACTORS
CO	2900
HC*	100
SO_X	41
NO_X	53
PM	54

EPA - 600/2-76-063
March, 1976

*based on oxidant production

From adjusted mass values, it may be seen that mobile and stationary sources are approximately equal in relative harmfulness of their total emissions. The bulk of adverse effects from mobil sources comes from nitrogen oxide emissions. Adverse effects from stationary sources, on the other hand, are produced primarily by sulfur oxides. A similar analysis of the four individual geographic areas indicates that the CBD constitutes the single most significant overall pollution source, although the Kennedy Corridor dominates mobile sources, primarily due to its levels of NO_X emissions.

c. Distribution of Pollutants

The pattern and rate of pollutant transport from various point, line and area sources determines the prevailing air quality in the study area. Transport is affected by four major variables: the nature of the pollutant, meteorology, topography, and source geometry. Of these factors, meteorology is by far the most significant factor. The atmospheric factors of wind speed, direction and vertical mixing are all important since they control the extent to which pollutants are diffused and determine the influence which one area may have on air quality elsewhere. The interplay between all the factors produces the time-varying patterns of air quality.

Four air quality monitoring stations have been selected as representative of air quality in the major study area subsectors. These include:

SITE	SUBSECTOR
1. GSA Building, Chicago	Chicago CBD
2. Steinmetz H.S., Chicago	Chicago Neighborhoods
3. Taft H.S., Chicago	Kennedy Corridor
4. Main West H.S., Des Plaines	O'Hare Area

Table II-5 summarizes the results of air quality monitoring at the selected sites. Particulate, NO_x, and SO_x data presented are annual averages, and the CO readings are the second highest 8-hour average. It should be noted that CBD carbon monoxide data was obtained from the US EPA CAMP station, since Site 1 does not include CO monitoring equipment.

d. Air Quality Standards

Air quality standards can be divided into the following classes:

- Ambient air quality standards
- Nondegradation criteria
- Standards for hazardous air pollutants
- Industrial pollutant standards.

The first two classes of standards apply to pollutant concentrations in the outdoor air, whereas the third applies to the emission of hazardous pollutants. The fourth class, the Occupational Safety and Health Act regulations, apply to pollutant concentrations inside industrial plants and other job areas where workers are likely to be exposed to pollutants. Therefore, they are not discussed here.

TABLE II-5

STUDY AREA
AMBIENT AIR QUALITY MONITORING DATA

		POLLUTANT CONCENTRATION			
POLLUTANT		SITE 1	SITE 2	SITE 3	SITE 4
PM (ug/m^3)	1964	158	89	82	NA
	1974	103	62	75	NA
	1975	95	67	60	NA
	1976	80	64	64	53
NO_x (PPM)	1974	.042	.033	.036	NA
	1975	.044	.034	.036	NA
	1976	.045	.035	.038	.036
SO_x (PPM)	1964	.172	.051	.048	NA
	1974	.023	.007	.010	NA
	1975	.019	.007	.007	NA
	1976	.013	.006	.006	.004
CO (PPM)	1971	18.9	NA	NA	NA
	1973	19.3	NA	NA	NA
	1975	23.9	NA	7.9	NA
	1976	13.0	NA	NA	NA

NA=Not Available

i. Ambient Air Quality Standards

Pursuant to the Clean Air Act of 1970, the US EPA has established national ambient air quality standards for six pollutants: sulfur dioxide, particulate matter, carbon monoxide, hydrocarbons, nitrogen dioxide, and photochemical oxidants. These standards are shown in Table II-6. They consist of both primary standards, which are intended to protect public health, and secondary standards, which are intended to protect public welfare, including protection against damage to property and vegetation, and aesthetic damage.

The State of Illinois has also established ambient air quality standards. The state particulate standards are the same as the Federal standards. However, for carbon monoxide, oxidants, hydrocarbons, and nitrogen dioxide, the state has only one set of standards equivalent to the Federal secondary standards.

TABLE II-6

US EPA

NATIONAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	PRIMARY STANDARDS	SECONDARY STANDARDS
Sulfur Dioxide	80 ugm/m^3 (aam) 0.03 ppm	1300 ugm/m^3 0.50 ppm (3 hr.)^1
	365 ugm/m^3 0.14 ppm (24 hr.)^1	
Total Suspended Particulate	75 ugm/m^3 (agm)	60 ugm/m^3 (agm)
	260 ugm/m^3 (24 hr.)^1	150 ugm/m^3 (24 hr.)^1
Carbon Monoxide	10 mg/m^3 (8 hr.)^1 9 ppm	10 mg/m^3 (8 hr.)^1 9 ppm
	40 mg/m^3 (1 hr.)^1 35 ppm	40 mg/m^3 (1 hr.)^1 35 ppm
Photochemical Oxidants	160 ugm/m^3 (1 hr.)^1 0.08 ppm	160 ugm/m^3 (1 hr.)^1 0.08 ppm
Non-methane Hydrocarbons	160 ugm/m^3 ^{1,2} 0.24 ppm	160 ugm/m^3 (3 hr.)^{1,2} 0.24 ppm
Nitrogen Dioxide	100 ugm/m^3 (aam) 0.05 ppm	100 ugm/m^3 (aam) 0.05 ppm

1 - Not to exceed more than once a year
2 - 6 a.m. to 9 a.m.
aam - annual arithmetic mean
agm - annual geometric mean

ugm - microgram
mg - milligram
ppm - parts per million
m^3 - cubic meter

ii. Nondegradation Criteria

The intent of the nondegradation criteria established by USEPA in December 1974, is to prevent significant deterioration of air quality in areas with currently clean air. These criteria apply to increments in the existing ambient concentration of particulate matter and of sulfur dioxide.

Three classes with different allowable increments in the above concentrations have been established: Class I represents the cleanest areas in which a small increment may cause significant deterioration; Class II represents the areas in which an increment associated with moderate urban growth may not significantly affect the air quality; and Class III represents the highly developed urban areas in which degradation of air quality up to the national ambient air quality standards may not be considered significant. Table II-7 summarizes the nondegradation criteria.

TABLE II-7

USEPA

SIGNIFICANT DETERIORATION CRITERIA

POLLUTANT	ALLOWABLE INCREMENTS	
	Class I ug/m^3	Class II ug/m^3
Particulate Matter		
Annual geometric mean	5	10
24-hour maximum	24	30
Sulfur Dioxide		
Annual arithmetic mean	2	15
24-hour maximum	5	100
3-hour maximum	25	700

For Class III, the above concentrations could increase until the air quality degrades up to the national ambient standards.

Initially, all areas in the U.S. were designated as Class II, but the states have the option of reclassifying any area to suit local community needs. Illinois has not reclassified any areas in the state.

iii. Hazardous Air Pollutants

Those air pollutants with no applicable ambient air quality standards are included in the hazardous air pollutant category. The US EPA has established emission standards for such pollutants. At present, asbestos, beryllium, and mercury are designated as hazardous air pollutants. The US EPA has the authority to include other substances in this category if they are found to pose a threat to public health and welfare.

2. Noise

Noise is generally defined as unwanted sound and is an undesirable side-effect of many commonplace urban activities. Its adverse effects range from annoyance and interference with sleep, work or recreation to physical and/or psychological damage. In this study, the intrusion of transportation-related noise upon human activities is of primary interest.

Noise levels are usually measured in terms of sound pressures relative to a reference standard. The logarithm of the ratio of observed to reference pressure has been defined as a decibel (dB). Noise levels typical in the urban setting are presented in Table II-8.

Since the impact of noise is defined in terms of effects upon humans, a measure of human response is necessary. Human response to noise varies with frequency, such that sensitivity is much less for high and low frequencies than for mid-range. To account for this phenomenon, noise is commonly reported in terms of a weighted unit called the dBA. For long-term, especially diurnal, noise exposures, a single index may be used to describe time-varying noise levels. This is called the Ldn or day-night sound level index. It is based on the equivalent sound level (L eq) or that constant sound level which would expend the same total energy over the averaging period as did the varying sound. The Ldn is the average L eq over 24 hours, with a 10dB weighting for nighttime noises.

Other noise level measurements have been developed for special purposes. These include NEF (Noise Exposure Forecast) used for aircraft noises, and the PNdB (Perceived Noise Level) used for comparison of annoyance levels between widely varying types of noise sources.

a. Major Noise Generators

In the O'Hare Extension study area, the major transportation-related noise generators are readily identified. Commercial and military aviation activities at O'Hare International Airport produce noise impacts throughout the area, while the John F. Kennedy and Edens Expressways, the Northwest and Tri-State Tollways, and the primary arterial streets define noise corridors of local importance. The existing mass transportation facilities, including the Kennedy Rapid Transit line of

TABLE II-8

TYPICAL OVERALL SOUND LEVELS
DECIBELS
RE 0.0002 MICROBAR

0	
10	
20	
	Broadcasting Studio (Music)
30	
40	
	Average Residence
	Light Traffic (100')
	Private Business Office
50	
60	
	Conversational Speech (3')
70	Dishwasher
	Autos (20')
	Accounting Office
	Light Trucks
80	Office With Tabulating Machines
	Inside Sedan in City Traffic
	10-HP Outboard Motor
90	
	Food Blender
	Heavy Trucks
	Inside Subway Car
100	Rock and Roll Band
	Woodworking Shop
	Loud Power Mower

the CTA, the Chicago and Northwestern Railroad northwest commuter line and the Chicago, Milwaukee and St. Paul Railroad commuter line also contribute to transportation noise generation.

i. Airport

The noise source in the study area having the greatest regional effect is O'Hare International Airport. The noise contours for operations at O'Hare for 1977 baseline conditions are given in Figure II-3. The contours in Figure II-3 indicate the extent of 65 Ldn and 75 Ldn noise levels. A total area of 11,804 acres is included within the 75 Ldn contour, while the 65 Ldn contour includes an additional 62,045 acres.

To estimate the effect of O'Hare operations on the surrounding communities, reference was made to a Northeastern Illinois Planning Commission study of noise at O'Hare Airport. This study generated projected 65 Ldn and 75 Ldn noise contours for 1975 baseline operations, and calculated the acres of land included within the 65 Ldn and 75 Ldn contours. The 65 Ldn and 75 Ldn contours were selected because they represent the noise levels at which potential exists for complaints from noise sensitive members of the population (65 Ldn), and at which complaints and organized opposition can be expected (75 Ldn).

Noise contours for projected 1975 and measured 1977 baseline operations contain a similar amount of total land area, although the location of land within each noise contour differs. Data from the 1975 noise contour is presented below to give a general idea of the scale of noise impact from aircraft operations at O'Hare Airport.

A total of about 60,600 persons reside within the 75 Ldn contour, while 458,000 more people reside within the 65 Ldn contour.

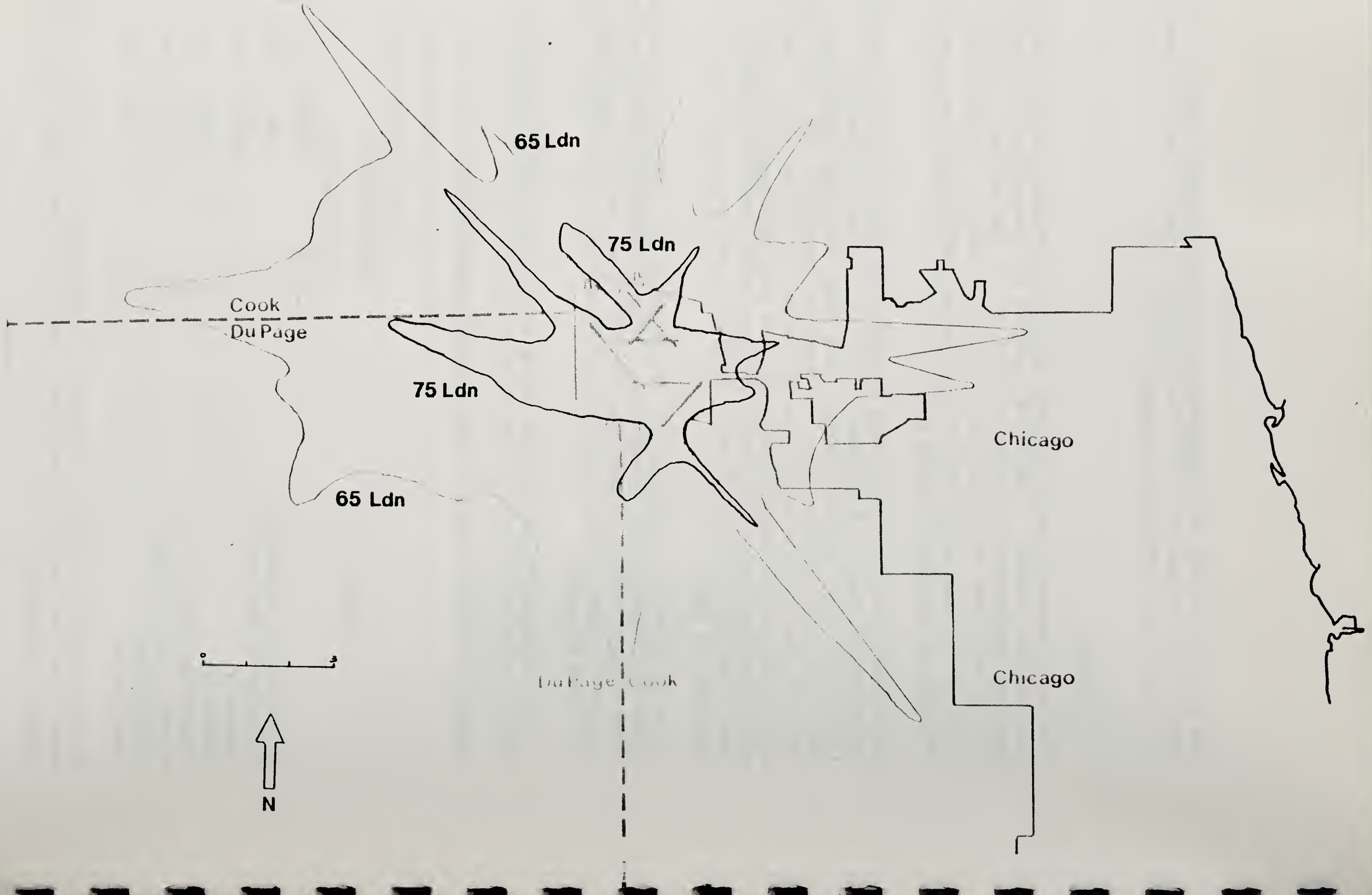
Impacts of various types of land uses are shown below.

LAND USE	ACRES EXPOSED AS % OF TOTAL	
	75 Ldn	65 Ldn
Single family Residential	14%	38%
Multi-family Residential	2%	4%
Industrial	21%	12%
Commercial	2%	5%
Transportation/Utilities	45%	18%
Recreation/Open Space	10%	12%
Institutional	1%	4%
Vacant/Water	5%	7%

As technological changes in aircraft are implemented in response to federal regulations limiting noise emissions, the size of the impact areas may be expected to decrease.

Figure II-3

1977 Noise Level Contours for Aircraft Operations at O'Hare



ii. Expressways

West of its junction with the Edens Expressway, the John F. Kennedy Expressway exhibits traffic volumes in excess of 120,000 ADT. In the segment of the Kennedy Expressway southeast of the junction, the combined flows raise traffic volumes to over 220,000 vehicles per weekday.

A study of noise levels attributable to the Kennedy Expressway in the study area was carried out by the Chicago Department of Environmental Control. Typical results of the study are given in Table II-9. In general, the study showed that the FHWA noise criterion for residential areas, 70dB(A) for the L_{10} (10th percentile) level, is exceeded at distances up to 800 feet from the edge of the highway until 10 PM.

At a distance of 400 feet from the roadway, continuous statistical analyzer measurements from 12 PM to 2 AM showed that the FHWA standard was met only between 9 PM and 2 AM. During the period 12 PM to 9 PM, the noise levels remained in the 71-75 dB(A) range. No noise measurements were made after 2 AM.

TABLE II-9

NOISE STUDY OF KENNEDY EXPRESSWAY
L_{10} RESULTS IN dB(A)

DISTANCE	12:30 PM	2:30 PM	4:00 PM	7:00 PM	10:00 PM	1:00 AM
50'	84	81	80	82	79	76
100'	78	77	80	79	71	69
200'	76	77	75	77	67	65
400'	74	74	74	72	64	58
800'	73	73	75	75	62	56

It is estimated that approximately 27,000 persons reside in sections of the study area along the Kennedy Expressway where the FHWA noise criteria for residential areas is exceeded.

iii. Arterials

Noise levels from arterial highways vary greatly depending upon traffic volumes, speeds and types of vehicles. The information presented in Table II-10 may be considered representative of conditions along similar roadways through the project study area.

TABLE II-10

COMMON ARTERIAL STREET NOISE DATA

TYPE OF ROAD	TRAFFIC VOLUME	SPEED	PEAK HOUR L_{10} dB(A)	DISTANCE
Secondary Arterial	12500 ADT	20 mph	69	50'
	Low Truck		64	100'
	Volume		60	200'
Primary Arterial	23000	30 mph	79	50'
	7% Trucks		76	100'
			74	200'
Primary Arterial	15000 6% Trucks	25 mph	64	100'
Primary Arterial	21000 10% Trucks	20 mph	76	35'

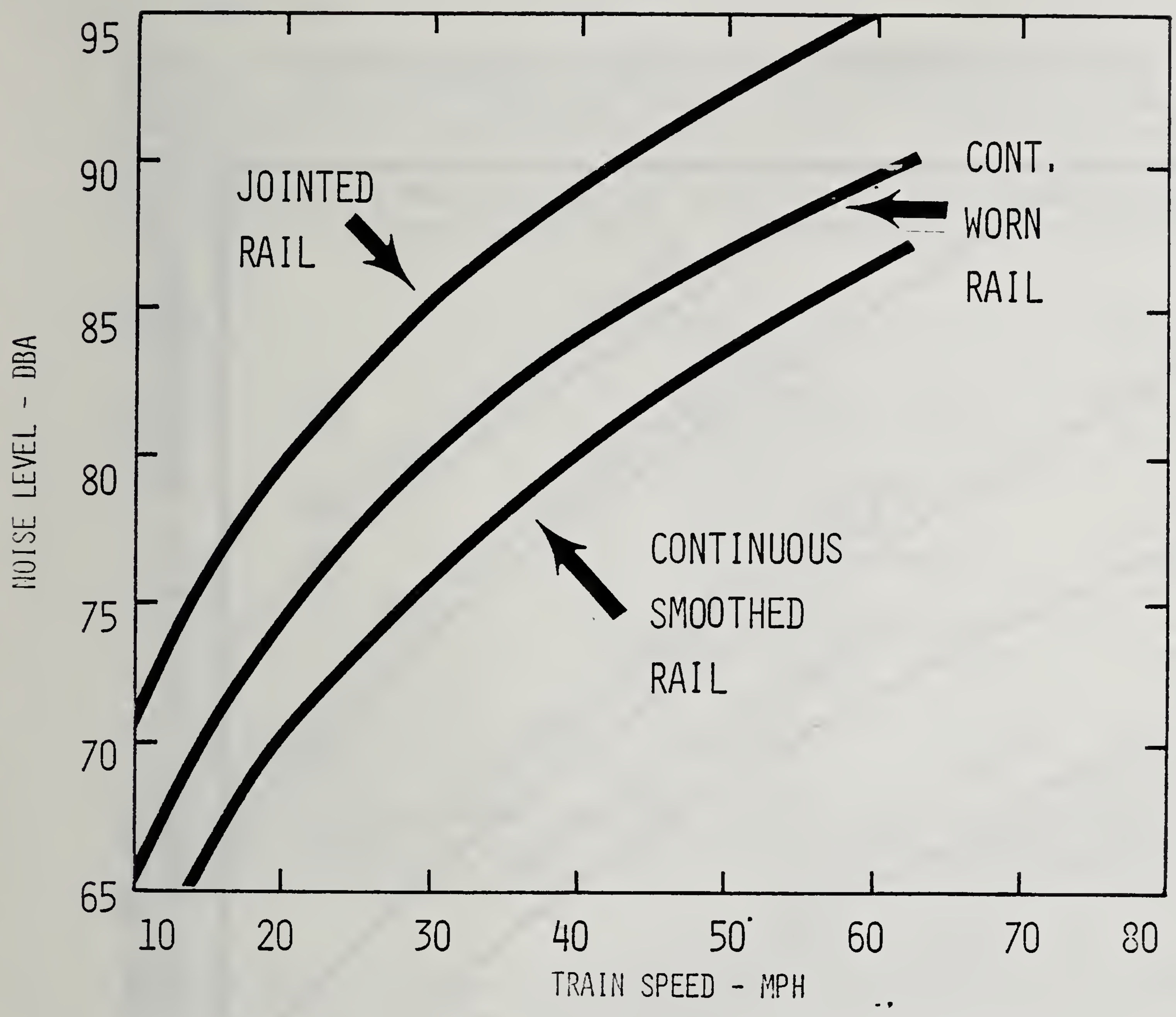
iv. Mass Transportation

Rapid transit operation along the Kennedy corridor generally constitutes a "single event" type noise generated against the background of continuous traffic noises. As transit service levels vary to meet the fluctuations in daily travel demand, so also will the frequency and intensity of noise event occurrence vary. Service variations on the route are summarized below.

Time Period	Equipment	Headways
Rush	6 car trains	3 min.
Base	4 car trains	5 min.
Night (1-5 AM)	2 car trains	15 min.

A study conducted by Wilson, Ihrig and Associates showed typical wayside noise levels generated by CTA transit cars under different track conditions. The study results are presented in Figure II-4. Typical transportation vehicle noise levels are presented in Figure II-5.

Figure II-4

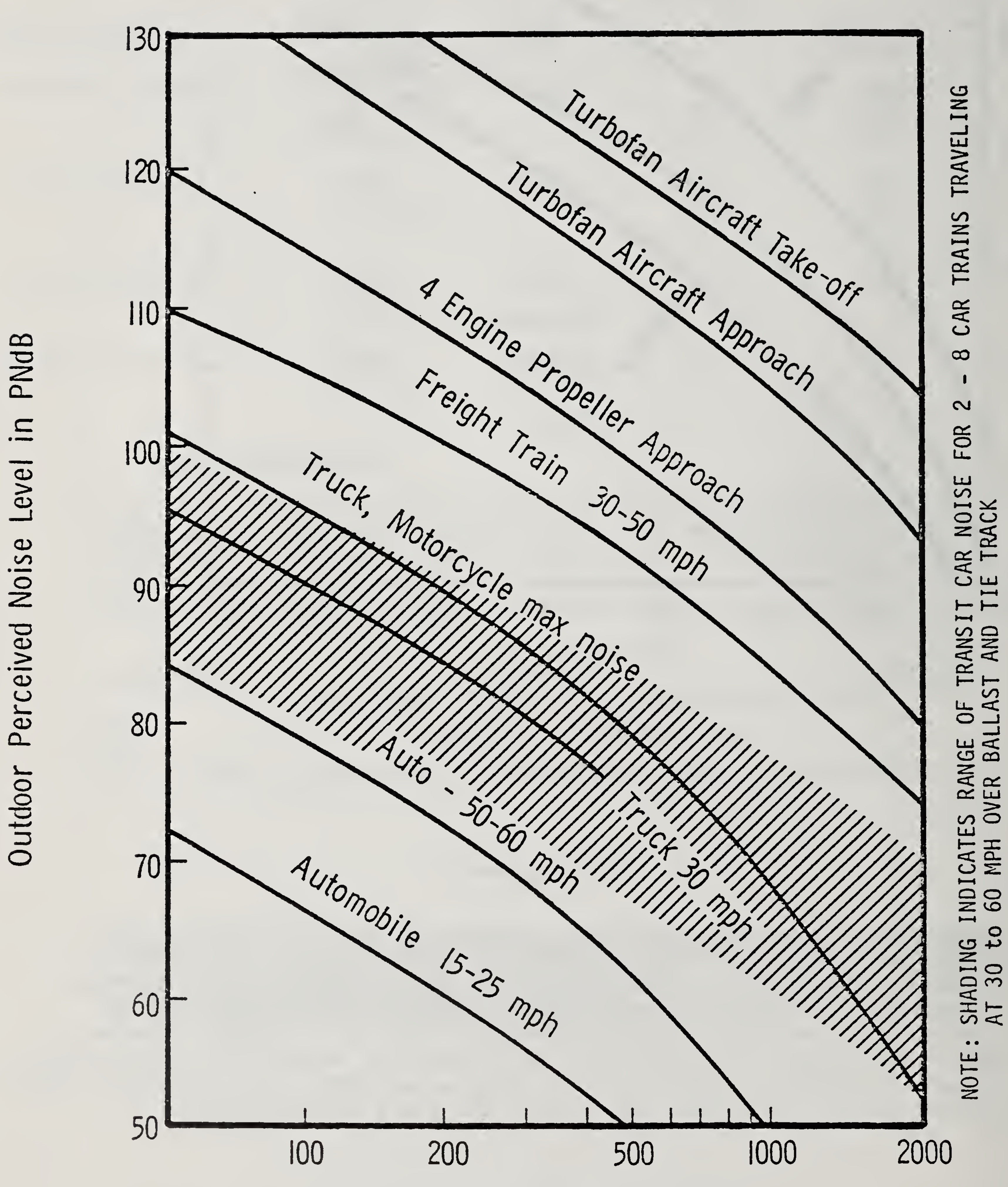


WAYSIDE NOISE LEVELS FOR 2000 SERIES TRANSIT CARS
FOR DIFFERENT TRACK CONDITIONS
2-CAR TRAINS - BALLAST & TIE TRACK - 50 FT FROM TRACK ℄

b. Noise Standards

Noise control guidelines which have significance within the project study area have been established by a number of public agencies. The agencies concerned include the U.S. Environmental Protection Agency, U.S. Department of Housing and Urban Development, Federal Highway Administration, Occupational Safety and Health Administration, and the City of Chicago. The Urban Mass Transportation Administration (UMTA) generally recognizes guidelines established by the American Public Transit Association (APTA) as criteria for transit project noise. The regulations of each agency are discussed below.

TYPICAL TRANSPORTATION VEHICLE NOISE LEVELS



NOTE: SHADING INDICATES RANGE OF TRANSIT CAR NOISE FOR 2 - 8 CAR TRAINS TRAVELING AT 30 to 60 MPH OVER BALLAST AND TIE TRACK

i. U.S. EPA

Guidelines promulgated by the U.S. EPA are based upon the Noise Control Act of 1972. They are intended to define levels necessary to protect public health based upon long-term exposure criteria. As with most Federal pollution standards, the need to protect hypersusceptible persons within the population with an adequate margin of safety forms the key consideration, with provision for minimizing annoyance secondary. The applicable EPA guidelines are:

LEVEL		LOCATION	CRITERIA FOR EFFECT
Ldn	74dB	All areas	Hearing loss
Ldn	55dB	Residential outdoor areas	Interference and annoyance
Ldn	59dB	Limited outdoor exposure areas	Interference and annoyance
Ldn	45dB	Residential indoor areas	Interference and annoyance
Ldn	49dB	Other indoor areas	Interference and annoyance

ii. U.S. HUD

HUD has established Noise Abatement and Control Standards for residential and other noise-sensitive areas. The regulations are intended to determine the acceptability of a given site for HUD-Assisted housing activities. The criteria are:

Exceeds 45dB(A) No more than 30 minutes per 24 hours .... Acceptable
Exceeds 65dB(A) No more than 8 hours per 24 hours .... Discretionary/Normally Acceptable
Exceeds 65dB(A) 8 hours per 24 hours .... Discretionary/Normally Unacceptable
Loud repetitive sounds on site .... Discretionary/Normally Unacceptable
Exceeds 80dB(A) for 60 minutes per 24 hours .... Unacceptable
Exceeds 75 dB(A) for 8 hours per 24 hours .... Unacceptable

iii. FHWA

The standards of FHWA apply to the planning and design of Federal-aid highway projects. They are designed as maximum levels of traffic noise which may be allowed to impact upon human activities for various types of land use categories. The design noise levels represent a balance between that which may be desirable and that which may be achievable. Thus, adverse noise impacts may occur even though design noise levels are achieved. The design noise levels and their associated activity relationships are given below.

ACTIVITY CATEGORY	DESIGN NOISE LEVEL - dB(A) L eq	L_{10}	DESCRIPTION OF CATEGORY
A	57 Exterior	60 Exterior	Tracts of land in which serenity quiet are extraordinarily significant
B	67 Exterior	70 Exterior	Residential, recreational, parks, schools, churches, hospitals, etc.
C	72 Exterior	75 Exterior	Developed lands not classified A or B
E	52 Interior	55 Interior	Residences, motels, hotels, meeting rooms, schools, churches, libraries, hospitals, etc.

iv. APTA

The American Public Transit Association (APTA), formed as a composite body representing the transit industry, has adopted criteria for train operation and vehicle design noise levels. The basis for establishing the levels is to assure community acceptance of transit operations. APTA criteria are informally recognized by UMTA as design standards for new transit systems. As such they are applicable to the proposed O'Hare CTA Extension project. The following tables summarize applicable APTA noise criteria.

WAYSIDE NOISE CRITERIA

LOCATION		TRANSIT NOISE LEVEL
Quiet residential		70 dBA *
Average residential		75 dBA *
Busy residential/semi-commercial		80 dBA *
Commercial/open space		85 dBA *
Underground station:	pass through	85 dBA **
	enter/leave	80 dBA **
	standing	67 dBA **
Above ground station:	enter/leave	75 dBA **

* At the boundary of land use

** At platform level

VEHICLE INTERIOR NOISE CRITERIA

Max. speed in open	68-72 dBA
Max. speed in tunnel	78 dBA
Stationary	65 dBA

v. OSHA

Under the Occupational Safety and Health Act, the Department of Labor established noise standards to protect industrial workers based on duration of exposure. The noise levels and daily exposure times are as follows:

HOURS PER DAY	SOUND LEVEL (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25	115

vi. City of Chicago

The City of Chicago promulgated a comprehensive noise control ordinance in July 1971. This ordinance established limits on noise from motor vehicles, construction equipment, power tools and equipment, and recreational vehicles. Standards for noise from buildings were also established.

The maximum allowable noise levels measured at 50 feet from construction vehicles and equipment in Chicago area are shown in the following table.

TABLE II-11

Manufacture Date	Noise Limit (dBA)	
	Vehicles (8,000 lbs. or more gross weight)	Construction Equipment*
After Jan. 1, 1968	88	N/A
After Jan. 1, 1972	88	86
After Jan. 1, 1973	86	84
After Jan. 1, 1975	84	80
After Jan. 1, 1980	75	75

* Does not include pile drivers.

The noise responsibility does not end with manufacturers. The user must maintain the product so that it will not emit more noise than the manufacturer intended. For vehicles with gross weight 8,000 lbs. or more, the following noise restrictions apply during operation:

TABLE II-12

Date	Noise Limit (dBA) at 50 feet For Posted Speed Limits	
	35 mph or Less	Over 35 mph
Before Jan. 1, 1973	88	90
After Jan. 1, 1973	86	90

The noise ordinance also prohibits use of noisy construction equipment in residential areas between 9:30 p.m. and 8:30 a.m. except for work on public improvements and work for public service utilities.

In the case of noise from buildings, the restrictions apply to noise levels measured at the property line or at the boundary of zoning district as follows:

TABLE II-13

Type of Land Use	Location of Noise Measured	Noise Limit (dBA)
Residential	Property Line	55
Commercial	Property Line	62
Industrial	Zoning District Boundary	58 to 66

3. Geology and Topography

The stratigraphy of the study area conforms to that of the general Chicago region with only minor variations. The primary features are the Quaternary, Sulurian and Ordovician formations. The uppermost, or Quaternary formations, include the surficial soil and glacial drift deposited by the continental glaciers that covered the Chicago area. These deposits range from 50 to 200 feet in depth. The Sulurian system primarily includes dolomite limestones with some chert and shale. North of O'Hare Airport, the highest member of this system, the Racine dolomite, is less than 20 feet thick, but increases to about 70 feet near Wilmette, Illinois and over 200 feet near Lake Michigan. Other members of the Silurian system include the Joliet, Kankakee and Edgewood formations. The Ordovician System is composed largely of shales with interbedded claystone and dolomite.

There is an area of major disturbance due to faulting known as the Des Plaines disturbance in the project area. This is a roughly circular area, about 5 miles in diameter, centering on the Des Plaines River near Dempster Street. Numerous vertical faults with displacements up to 600 feet have caused mixing of old and new rock strata at the bedrock surface. The surrounding Silurian structure is relatively undisturbed. There is no indication of this fault zone at the surface since it is covered with 75 to 200 feet of glacial drift. Other zones of faulting in a northwest-southeast direction have been identified by the Metropolitan Sanitary District. Small displacement vertical faulting is a common phenomenon in the entire region.

There have been four earthquakes of significant magnitude recorded near Chicago during the last 175 years. Only one earthquake, in 1804, is assumed to have been associated with the Des Plaines disturbance.

The study area is characterized by gently rolling, undulating landforms of slight vertical relief. A general eastward downslope ranges from a high of about 700 feet above sea level west of O'Hare Airport to 590 feet at Lake Michigan. The Des Plaines River and North Branch of the Chicago River at 625 feet elevation are separated by a 635 to 650 foot former drainage basin divide. Parallel minor ridge lines running generally north-south along the Lake Michigan shoreline mark former erosional shorelines of the old glacial Lake Chicago. The lack of topographic relief in the area is a significant factor in problems of flooding and storm drainage in the heavily urbanized area.

4. Water Resources

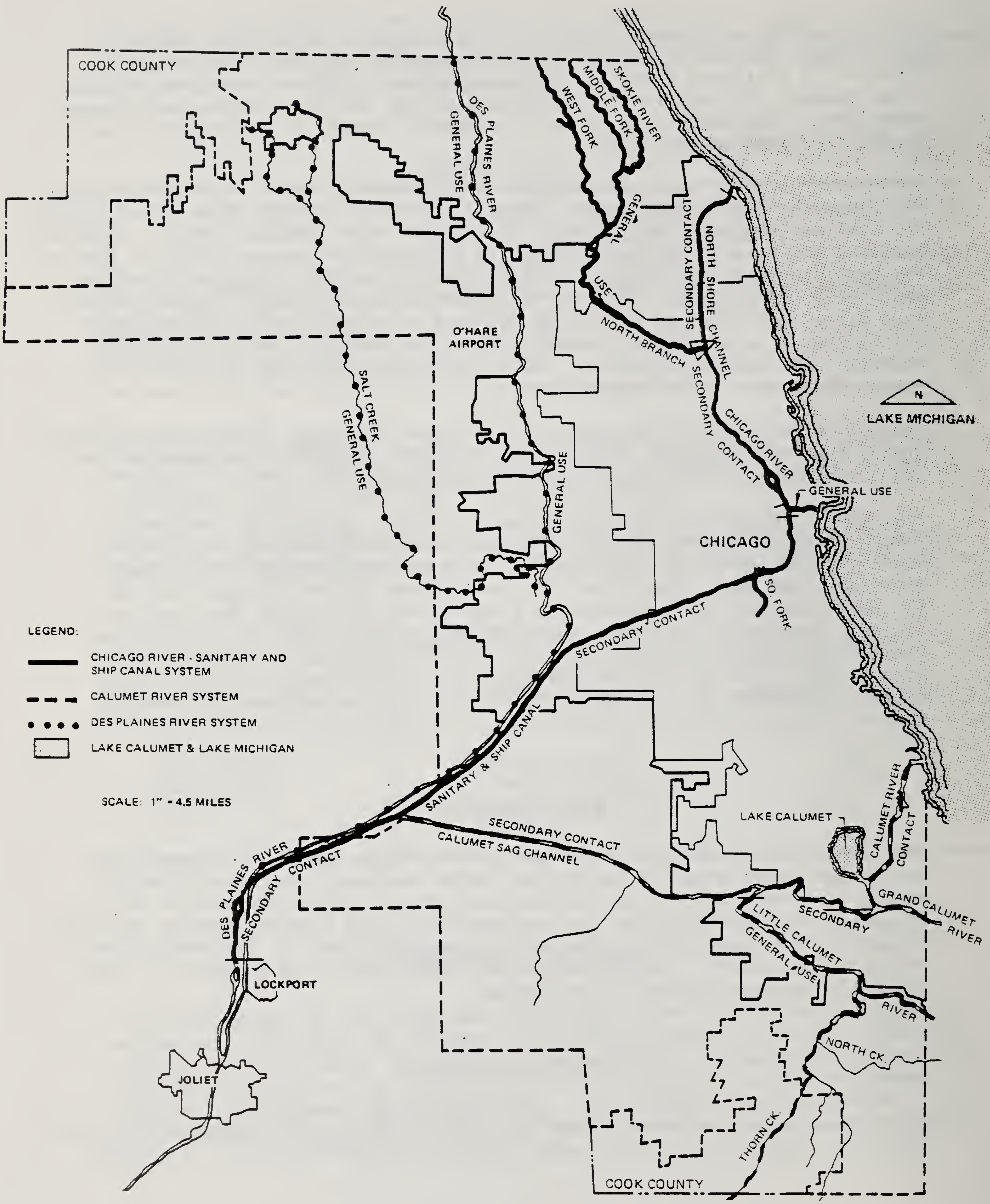
The surface and groundwater supplies of the Chicago region, in general, and the project study area, in particular, serve many uses, including drinking water, transportation, recreation and sanitation. The surface waters vary in quality and quantity from the relatively pristine Lake Michigan to polluted industrial waterways such as the Sanitary and Ship Canal or the North Branch of the Chicago River. In Figure II-6 the major study area waterways systems and their component parts are delineated.

a. Public Water Supply

The primary source of domestic and industrial water in the Chicago Area is Lake Michigan. Seventy-five public water supplies including the City of Chicago

Figure II-6

Chicago Area Waterways and
State Water Use
Classifications



obtain their water from the lake while 267 utilize groundwater. Only 8 percent of the regional population relies upon individual household wells. Total regional water consumption is approximately 1200 million gallons per day (MGD) of which 100 MGD derives from groundwater resources and 1100 MGD from Lake Michigan. The City of Chicago and the 10 suburban municipalities within the study area account for an 885 MGD consumption rate. Of this total, only 1 MGD is drawn from groundwater.

Water quality in the areas supplied with Lake Michigan water is among the best in the nation. The Central and South Water Filtration Plants of the City of Chicago apply physical and chemical treatment at a "state-of-the-art" level to produce potable water. Groundwater supplies on the other hand, vary widely in quality. Water from the lower aquifer has a higher mineral content and more uniform quality than the upper glacial drift and dolomite aquifer. In a given aquifer, quality generally does not change with depth. Water hardness in the lower aquifer increases toward the east from about 350 ppm in the vicinity of the Des Plaines River to about 600 ppm near Lake Michigan. Chloride concentrations show a similar trend from 40 ppm at the river to 150 ppm at the lake. Concentrations of constituents in the upper aquifer vary too widely to show any general trends, although hardness is generally considered "high" and some locales are known to be grossly polluted with heavy metals, ammonia, sulfides, bacteria, or similar hazardous substances.

b. Des Plaines River

The Des Plaines River originates in the southeastern part of Wisconsin and flows southward parallel to the Lake Michigan shoreline about 7-10 miles inland. In the project study area it flows through a highly urbanized, primarily residential watershed, but the actual course of the river follows a belt of the Cook County forest preserves defining its flood plain. Generally, the Des Plaines flood plain is an attractive greenbelt of woods and wetlands containing stands of cottonwood, ash, oak, willow and box elder.

The waterway is generally characterized by sludge deposits, a septic odor, heavy algal blooms during summer and poor water quality. Most fish species are pollution-tolerant or very hardy types. Annual water flow as reported at the Des Plaines guage in the project study area averages 503 CFS (Cubic Feet/Second) with high and low flows of 2000 CFS and 215 CFS, respectively.

c. North Branch of the Chicago River

The North Branch is part of the Chicago River System which also includes the North Shore Channel, the Chicago River, the South branch and various minor tributaries. The North Branch flows generally southeastward through heavily urbanized areas to its confluence with the North Shore Channel and thence to the Illinois River System through connections to the Sanitary and Ship Canal. Water levels, flow rates and direction of flow are controlled by locks and sluice gates between the Chicago River System and Lake Michigan.

The portion of the North Branch which falls within the project study area is very sluggish except during storm periods. Flows have ranged from 2.4 CFS to 2210 CFS over a 10 year period, with a mean of 79.5 CFS. This segment of the North Branch, above the North Shore Channel junction, is the only portion of the Chicago River System which is considered suitable to support aquatic life. Even so, only pollution tolerant and very hardy species are likely to be found.

d. Standards

Water quality regulations in Illinois are established by the Illinois Pollution Control Board pursuant to authority granted under the Illinois Environmental Protection Act. The IPCB defines four general classifications of water use, each with its own specific water quality parameters. The classifications are: general use, public and food processing water supply, Lake Michigan and restricted use. General use defines waters which should be suitable for supporting aquatic life and is the class for all waters except those otherwise designated. Water standards for public and food processing supplies are more stringent in order to protect public health. Lake Michigan standards are the most stringent classifications and are intended to maintain a pristine quality aquatic environment. Restricted use waters have rather lenient standards due to their usage for industrial purposes and are suitable only for secondary contact (incidental or accidental water contact not involving ingestion). Restricted waters do not provide for the protection of aquatic life.

Of the waterways considered in this study, the Des Plaines River and the North Branch of the Chicago River north of the North Shore Channel junction are considered General Use facilities while the North Shore Channel and the remainder of the Chicago River System, excepting the main branch, are in the Restricted or Secondary Contact class. Table II-14 shows the standards applicable to each classification and summarizes pollutant level ranges observed on the principal Chicago area waterways.

The Pollution Control Board also sets effluent standards which prescribe the maximum concentrations of various contaminants which may be discharged to the waters of the State.

5. Biological Resources

Many species of wildlife reside in or migrate to the forest preserves, parks, and other natural tracts in the project area. Over 100 species of birds have been sited with most being the migratory and waterfowl type. Common mammals residing in the natural areas include: eastern cottontail, opossum, racoon, gray squirrel, red fox, and woodchuck. In the Des Plaines River watershed alone, 16 species of amphibians, 22 species of reptiles, and 46 species of mammals have been found.

TABLE II-14

Summary of Pollutant Concentration Ranges in Chicago's Surface Water Systems

Pollutant	Chicago River — Sanitary and Ship Canal System	Calumet River System	Des Plaines River System	Applicable Illinois Standards*	
				Secondary Contact	General Use
Dissolved oxygen (DO)	1.2 to 7.7 mg/l	3.9 to 9.0 mg/l	6.0 to 10 mg/l	5.0 mg/l[1] 4.0 mg/l (1978)[2] 3.0 mg/l 4.0 mg/l min.[1] 2.0 mg/l min.	6.0 mg/l 5.0 mg/l min.[3]
Biochemical oxygen demand (BOD)	5.2 to 9.2 mg/l	4.1 to 7.3 mg/l	5.0 to 6.7 mg/l	4-20 mg/l[4]	4-20 mg/l[4]
Ammonia (as N)	0.8 to 6.2 mg/l	1.3 to 13 mg/l	0.3 to 1.2 mg/l	4.0 mg/l (winter) 2.5 mg/l (summer)	2.6 mg/l[3]
Suspended solids (SS)	19 to 54 mg/l	12 to 73 mg/l	29 to 68 mg/l	5-25 mg/l[5]	5-25 mg/l[5]
Fecal coliform	477 to 12,700 (counts/100 ml)	152 to 738 (counts/100 ml)	411 to 8,700 (counts/100 ml)	1000/100 ml[1]	200/100 ml[2]

* Effluent discharge standards apply if water quality standard is not designated.

[1] North Shore Channel Standards

[2] Chicago River-Sanitary and Ship Canal System and Calumet River system.

[3] General Use Standard applicable to Des Plaines River system.

[4] 4 mg/l-Hanover, Egan, and O'Hare Sewage Treatment Plants
10 mg/l-WSW and Calumet Sewage Treatment Plant
20 mg/l-Lemont Sewage Treatment Plant

[5] 5mg/l-Hanover, Egan, and O'Hare STP
12mg/l-WSW and Calumet STP
25mg/l-Lemont STP

Aquatic life in the rivers and streams of the area is currently limited to pollution-tolerant or hardy species. Poor water quality conditions of these waterways have reduced the numbers and types of aquatic life. The major species of fish in the watershed includes: central mudminnow, white sucker, carp, goldfish, stone-roller, creek chub, bluntnosed minnow, fathead minnow, golden shiner, black bullhead, largemouth bass, green sunfish, bluegill, pumpkinseed, sunfish (lepomis), and Johnny darter.

The relative purity of Lake Michigan water supports a much broader range of aquatic life, including some species introduced by man accidently, as the alewife and sea lamprey, or purposefully, as the coho salmon. Other fish species in the Lake include: lake whitefish, lake herring, lake sturgeon, lake trout, yellow perch, bloater, chinook salmon, rainbow smelt, atlantic smelt, atlantic salmon, brook trout, brown trout, walleye, rainbow trout, carp, white sucker, round whitefish, and smallmouth bass.

The vegetation normally found in the natural tracts of the study area consists of a modified form of the beech-maple forest in more moist areas and oak-hickory forests in the more open areas. The transitional flora between these two forest types include maple-basswood and maple-basswood-red oak forest. The natural vegetation common to wetland areas along area streams and rivers is comprised mostly of cottonwood, poplar and willow with occasional oak, maple and mulberry. Smaller plant types such as forbs, cattails, arrowheads, nettles and various grasses are also common.

III. IDENTIFICATION AND ANALYSIS OF ALTERNATIVES

A. DESCRIPTION OF ALTERNATIVES

As O'Hare Airport was assuming the role of the region's commercial air traffic center, its environs experienced dramatic population increases. This area also became a major employment center as commerce, industry, and hotel/convention facilities located near O'Hare and in proximity to the expressways. These phenomena have created increasing stress on the ground access system between O'Hare and the Chicago CBD, especially on the Kennedy Expressway.

In response to projections of continued growth, the City of Chicago commissioned several studies to identify possible means of alleviating current and expected access problems. The City Departments of Aviation, Public Works, and Streets and Sanitation have worked with consultants in designing and evaluating alternative access schemes. The planning process has also included the other regional transportation agencies and the public, with input from all parties regarding project design and operation.

Nine alternatives are included in this section for evaluation, representing both bus and rail modes. For convenience, they are labelled B-1 through B-5 and R-1 through R-4, as described below.

1. Bus Alternatives

a. No-Build

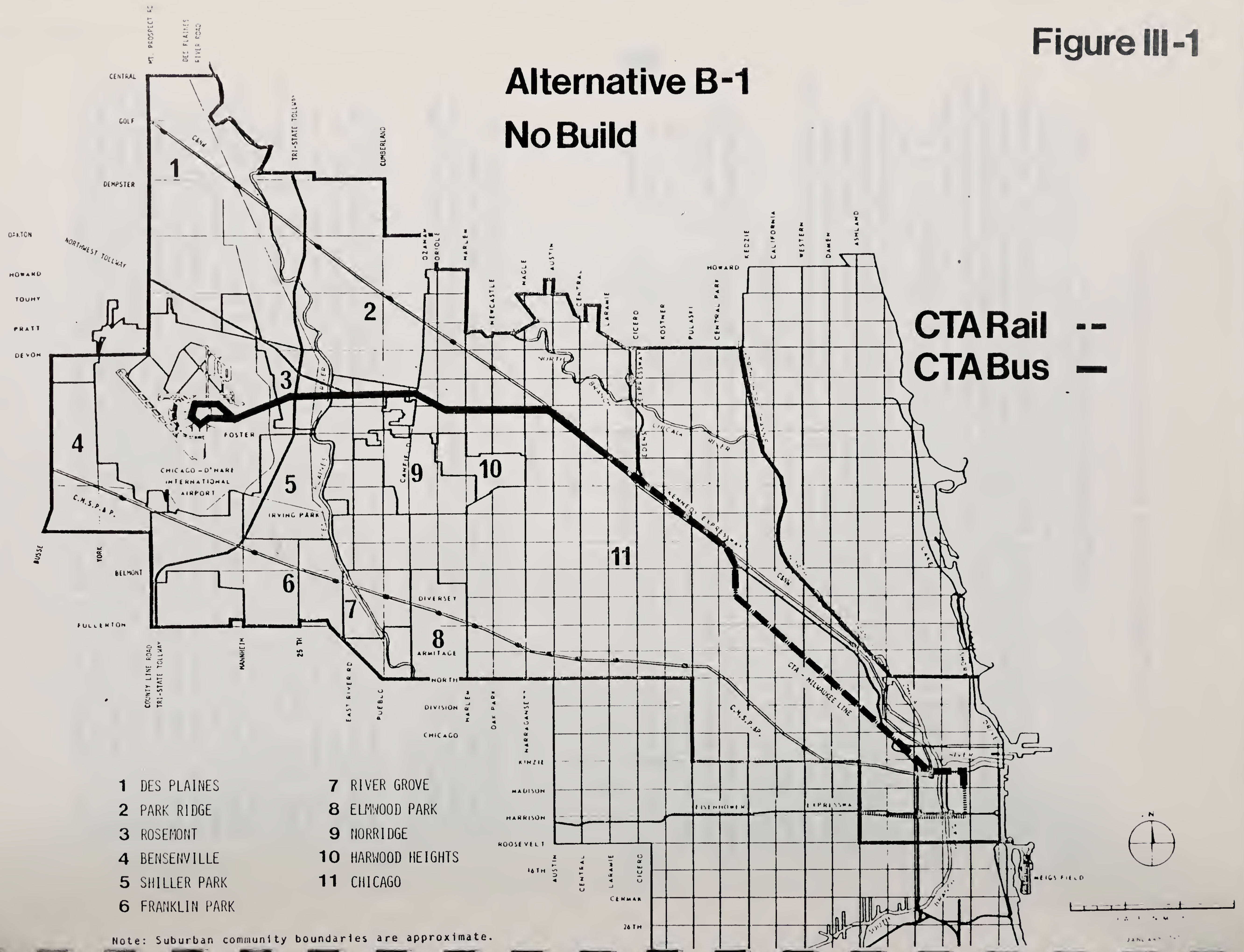
Scheme B-1

The No-Build Alternative represents the combination of existing public and private mass transportation services to O'Hare Airport. These include: CTA O'Hare Express Bus, Continental Air Transport, suburban bus lines, taxi, and transportation to and from the airport via private buses operated by airport area hotels. (See Figure III-1.)

The CTA service to the airport, the O'Hare Express Bus (Route 40), operates between the Jefferson Park terminal of the Milwaukee Rapid Transit Line and the airport. The total trip from the CBD to O'Hare involves boarding the rapid transit line and transferring to the bus at Jefferson Park. The bus uses local streets to access the Kennedy Expressway for the trip to O'Hare, where stops are made on the Lower Level Roadway at each terminal building and at the airport Cargo Area. Between the CBD and Jefferson Park, the rapid transit trains make 9 intermediate stops when A and B service is in operation and all 13 stops in the evening and on weekends. Peak hour headways are 2½ minutes, base headways are 5 minutes, and night service headways are 15 minutes. At the transfer point, passengers must walk from the train platform to a bus loading island to wait for a bus. The O'Hare Express buses provide service at all times, with daytime headways of 15 minutes, early morning and evening headways of 30 minutes, and night headways of 60 minutes. Total trip time between the CBD and O'Hare is 59 minutes west bound and 64 minutes eastbound, because the Cargo Area at O'Hare is served on the return leg of the trip.

Figure III-1

Alternative B-1
No Build



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8 ELMWOOD PARK
9 NORRIDGE
10 HARWOOD HEIGHTS
11 CHICAGO

Note: Suburban community boundaries are approximate.

The CTA's fare for this service is $0.75, which includes the base fare of $.50, transfer cost of $0.10, and a surcharge of $0.15 which is collected on the bus.

Continental Air Transport operates an airport access bus service from the Central Area of Chicago to the airport and from suburban communities to the airport. The trip from the Central Area to the airport is made non-stop, though a number of stops may be made within the Central Area itself. An estimated 450 trips are made between the Central Area and the airport each weekday between 4:45 a.m. and midnight with service provided as frequently as every 15 to 20 minutes. The Central Area routes serve eighteen hotels and the Sears Tower.

In 1976, about 4,000 passengers used the downtown airport service on an average weekday. The current fare for this trip is $3.50. The five suburban Continental Air Transport airport access routes carried about 500 daily passengers on 36 bus trips in 1976. Suburban service fares range from $3.50 to $10.00 depending on the suburb served.

Travel times on Continental Air Transport routes to the airport vary depending on the trip's origin. Travel time from hotels in the southern section of the Central Area average 40 minutes (55 minutes or more during the evening rush hours). Trips from hotels in the northern and western sections of the Central Area average 50 to 55 minutes (70-75 minutes or more during the evening rush hours). Travel times on the suburban routes vary from 50 to 95 minutes depending on trip distance and the number of intermediate stops.

Two suburban bus companies operate routes to the O'Hare Airport terminal area. Nortran operates Route 220 providing access to the airport from the suburban communities of Glenview, Park Ridge, Des Plaines, and Rosemont. Route 220 also serves the Glenview station of the Milwaukee Road North Line and the Des Plaines station of the C&NW Northwest Line. The combination of commuter train lines and Route 220 allows access to the airport from any point along either commuter line, including the Central Area. (These service combinations are rarely used for the Central Area-airport trip as they are much more circuitous than other options.)

Nortran operates Route 220 from approximately 5:45 a.m. to 7:00 p.m. Monday through Friday. Saturday service operates between approximately 7:00 a.m. and 6:40 p.m. No Sunday or holiday service is provided. A $0.50 one-way fare is charged. Daily ridership to and from the airport in 1976 was about 325 persons.

West Town's Bus Company operates Route 330 from the southwest suburb of Summit north to O'Hare Airport, serving the study area suburbs of Franklin Park and Schiller Park. Route 330 also serves suburban stations of the following commuter rail lines: Burlington Northern, Chicago and Northwestern West Line, and Milwaukee Road West Line. (Again, these bus-rail combinations do not provide a high level of service from the CBD to the airport.)

Route 330 operates every half hour between 6:00 a.m. and 7:00 p.m. Monday thru Friday. Saturday operation extend over the same period but at one hour intervals. No Sunday or holiday service is provided. The one-way fare is $0.50.

Taxi service to O'Hare Airport is available on demand from any point in the City of Chicago and surrounding suburbs. Taxi service from points within Chicago is provided by taxicabs licensed by the City. A total of 4,600 taxicab licenses have been issued by the City of Chicago, Department of Consumer Sales, Weights and Measures. Chicago licensed taxicabs are also permitted to transport passengers from the airport to suburban destinations. Taxi service from suburban locations is provided by suburban taxicab companies.

The average fare for a one-way taxi trip from the Palmer House Hotel in the CBD to O'Hare Airport is $10.50.

Free shuttle services are provided by hotels in the O'Hare area. These services are limited to trips between the hotels and the airport.

b. Modified No-Build

Scheme B-2

The Modified No-Build includes all services mentioned in Scheme B-1, with a slight change in the CTA service. Under this alternative, CTA O'Hare Express Bus service to the airport cargo area is eliminated. Faster bus turnaround would result and three buses would be required during peak hours instead of the current four. Off-peak travel time from the Central Area to the airport would be 59 minutes in each direction. All characteristics of this service, other than travel time and airport stops, are identical with Scheme B-1. (See Figure III-2.)

c. CTA Bus from C&NW

Scheme B-3

This scheme provides CTA express bus service from the Park Ridge C&NW commuter station to O'Hare Airport. For the CBD-O'Hare trip, passengers would board trains at the Northwestern Station just west of the CBD and transfer to buses at the Park Ridge station. Buses would use local streets and the Kennedy Expressway to O'Hare, making stops only at the passenger terminals. (See Figure III-3

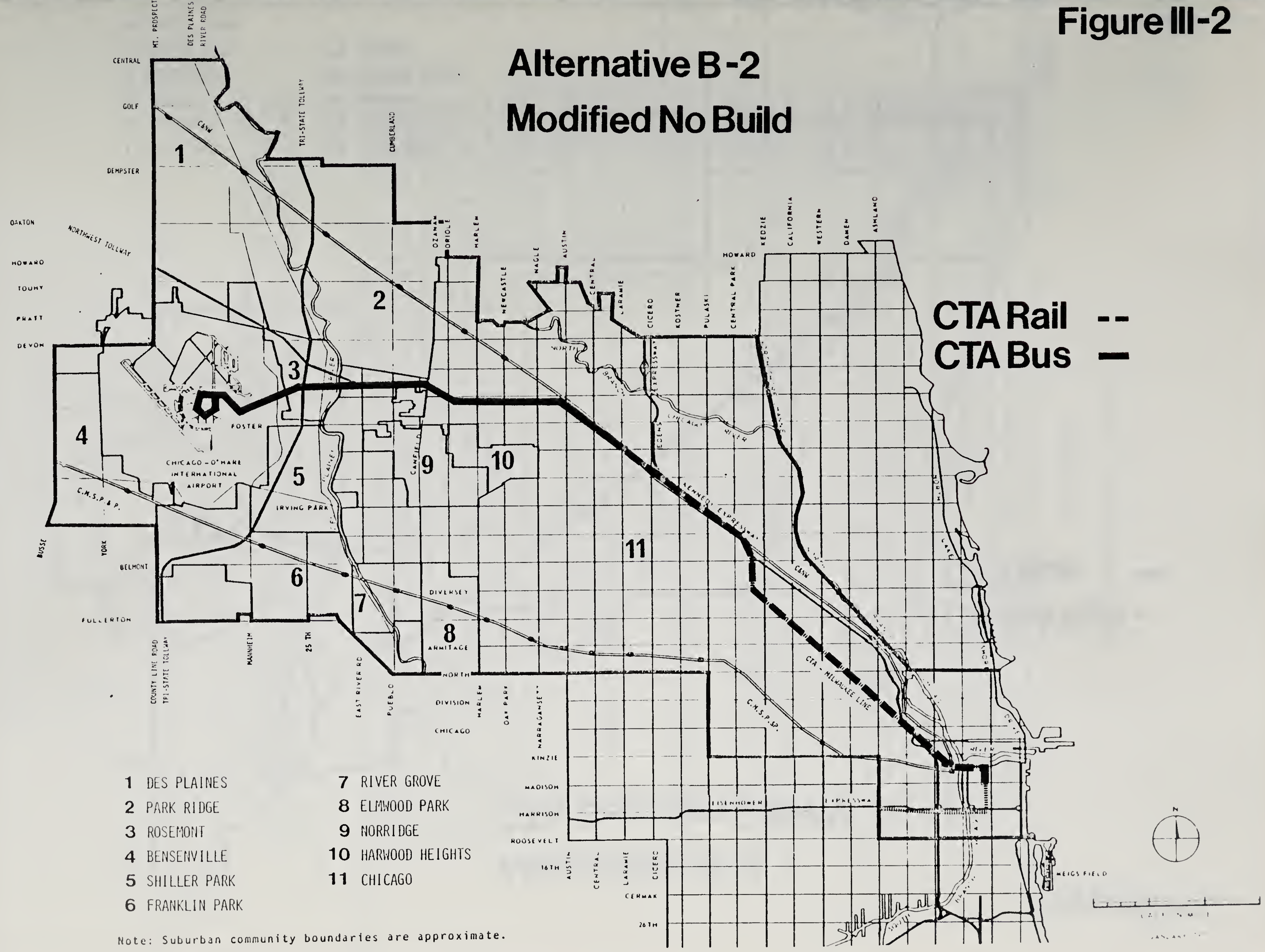
The C&NW commuter trains make 1 to 3 intermediate stops on the express service and 6 stops on the local service. Inbound in the morning and outbound in the evening, headways vary between 5 and 20 minutes. Off-peak and reverse direction headways are 1 hour on weekdays; Saturday headways are 1 hour; and Sunday headways are 2 hours. Buses would have 15 minutes headways during peak hours, 30 minute base headways, and 1 hour Sunday headways. No service would be available when trains are not operating. Access time westbound is 88 minutes and eastbound is 103 minutes.

The total one-way fare for this service would be $1.70, which includes $1.20 for the CBD to Park Ridge portion plus $0.50 for bus service. Currently, joint bus-commuter rail fares are not available.

The capital costs associated with this scheme are for a bus shelter and signs at the Park Ridge Station.

Figure III-2

Alternative B-2
Modified No Build



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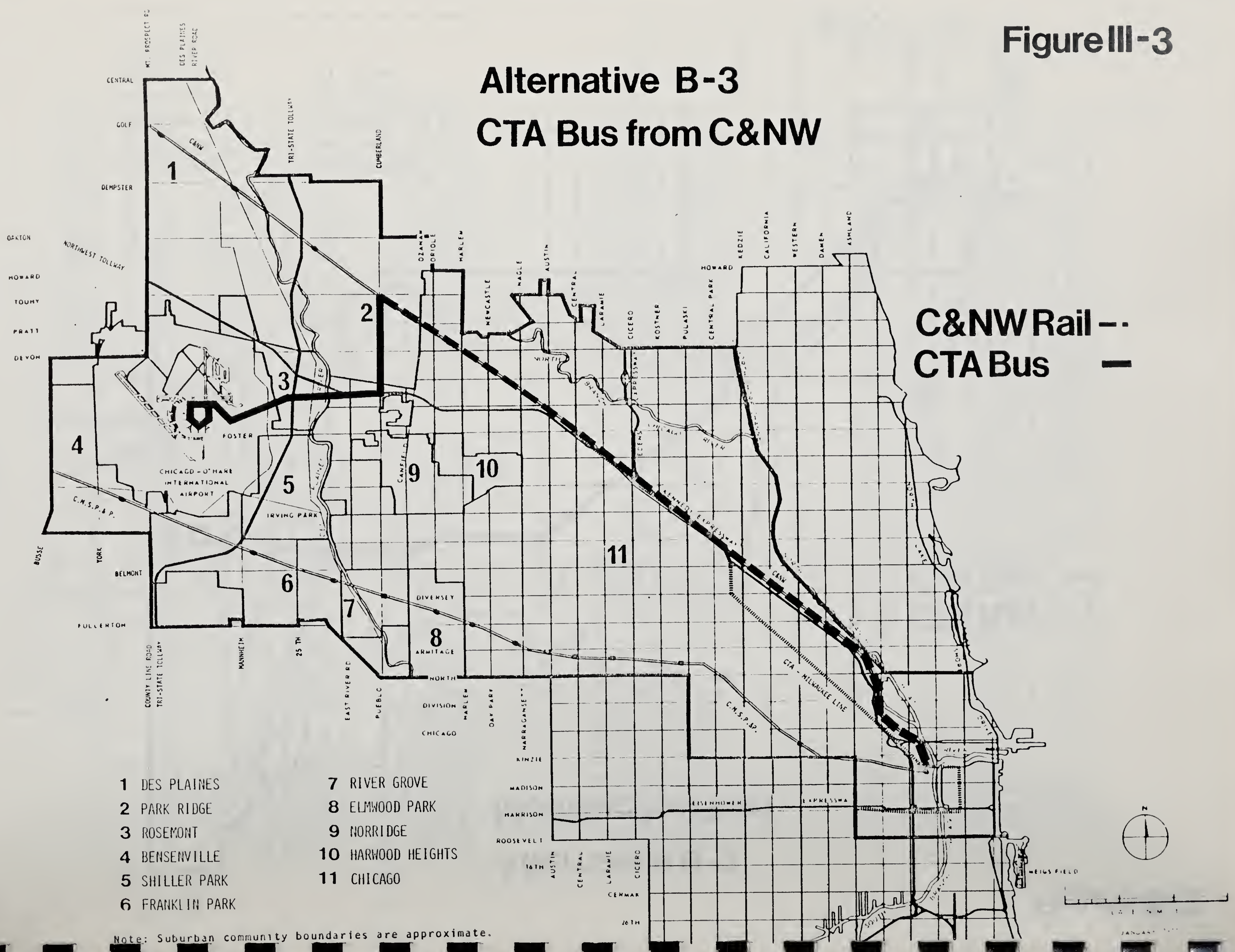
Note: Suburban community boundaries are approximate.

Figure III-3

Alternative B-3
CTA Bus from C&NW



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Note: Suburban community boundaries are approximate.

d. CTA Bus from Milwaukee Road

Scheme B-4

In this scheme, CTA bus service to O'Hare is provided from the Franklin Park Station of the Milwaukee Road commuter line. The Central Area terminal is Union Station, located in the western portion of the CBD. Peak hour express service to Franklin Park includes between 1 to 4 intermediate stops, with local service including 9 stops. Headways during peak hours vary between 5 and 30 minutes. Off-peak and reverse direction headways on weekdays vary from 1 to 3 hours, Saturday headways are 1 to 3 hours, and Sunday the headways vary between 3 and 5 hours. Headway time for interfacing buses would be 15 minutes in peak periods, 30 minutes at other times, and 1 hour on Sundays. Westbound access time is 76 minutes, with the eastbound trip requiring 121 minutes. (See Figure III-4.)

Bus service is provided from the station to O'Hare via local streets and the airport Access Road, with stops only at the passenger terminals. The one-way fare for this trip is $1.40, with the train mode accounting for $0.90 and the bus $0.50.

Capital costs necessary in this scheme include investment in a bus turnaround, a shelter, and signs.

e. Exclusive Bus Lanes in the Kennedy Expressway Median

Scheme B-5

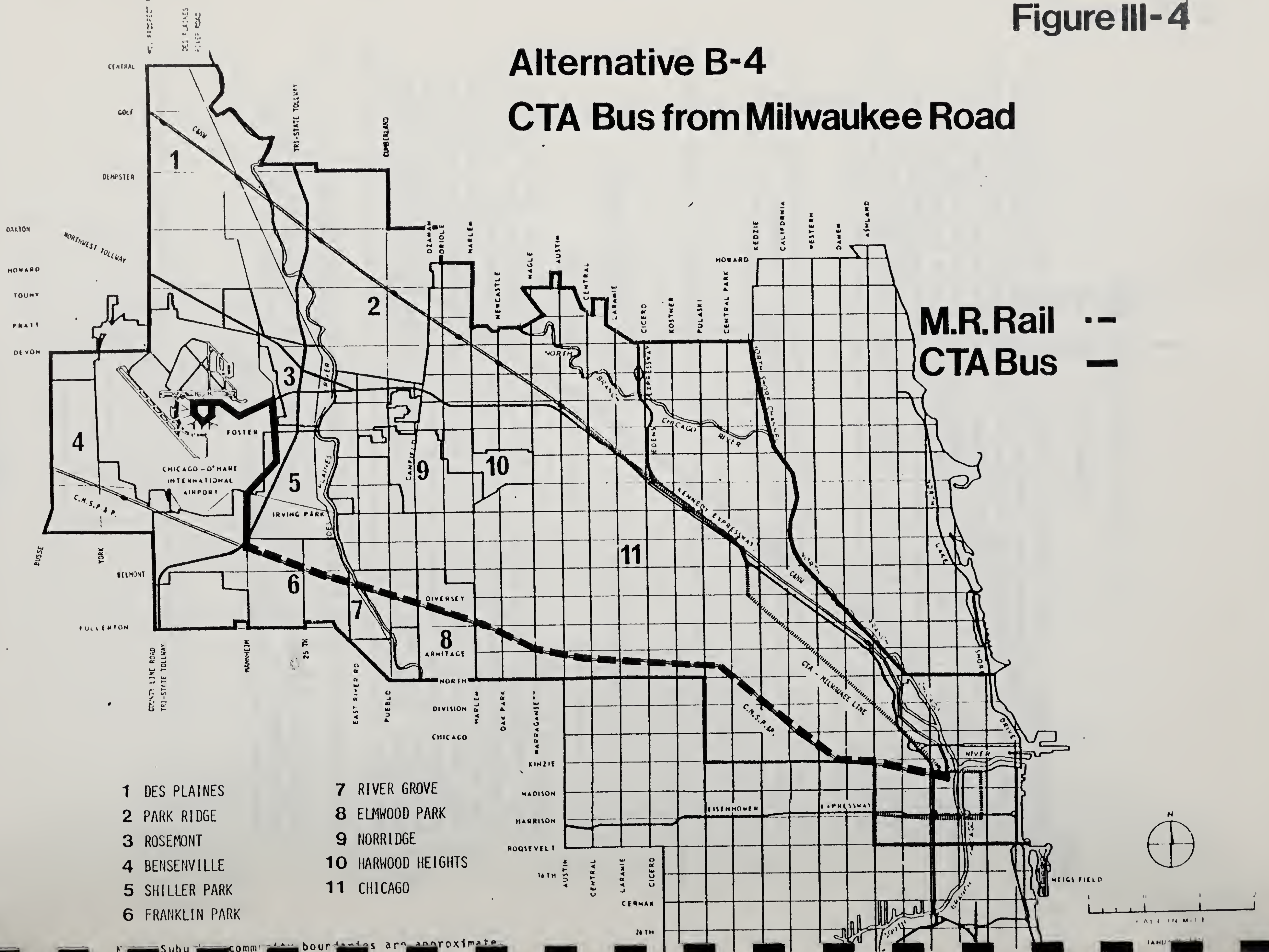
Scheme B-5 involves retaining a CTA express bus service from the Jefferson Park Terminal to O'Hare Airport. This bus service would, however, operate on exclusive lanes constructed in the Kennedy Expressway median. Buses would use local streets and regular expressway lanes for access to the exclusive lanes which would begin north of the existing rapid transit maintenance shop at Foster Avenue. Proceeding to the airport, buses would re-enter regular expressway lanes upon approaching the airport at the Taxiway Bridge. From this point, buses would enter the terminal area, stop at each terminal building, then return to the Jefferson Park terminal via the same route. (See Figure III-5.)

Capital costs for this alternative cover the cost of constructing the bus lanes.

Service characteristics, including off-peak travel times, would be the same as for Scheme B-2. Travel time savings would be realized during the peak hours when the trip would be made in 64 minutes.

Figure III-4

Alternative B-4
CTA Bus from Milwaukee Road



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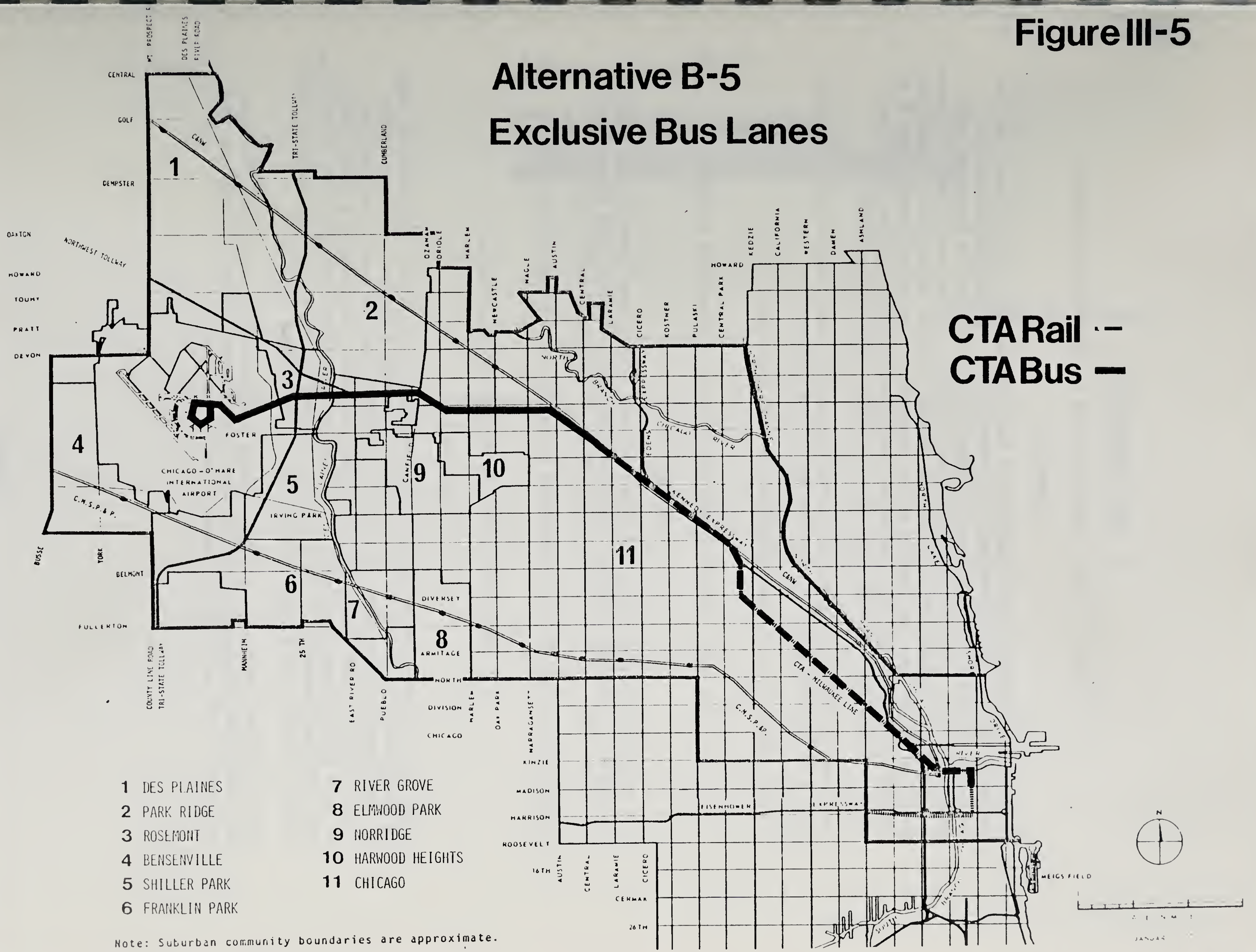
N Subu comm boundaries are approximate.

Figure III-5

Alternative B-5
Exclusive Bus Lanes



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Note: Suburban community boundaries are approximate.

2. Rail Alternatives

a. CTA Rapid Transit Extension With 3 Intermediate Stations

Scheme R-1

Scheme R-1 represents the extension of the existing CTA rapid transit in the median of the Kennedy Expressway to O'Hare field. Intermediate stations would be located at Harlem Avenue, Cumberland Avenue, and in Rosemont; and each would have an adjacent park-n-ride facility. Trains would make 12 intermediate stops between the CBD and O'Hare when A and B service is in operation and 17 stops during the evening and on weekends. Peak hour headways are 2.50 minutes, base headways are 5 minutes, and night service headways are 15 minutes. Average access time would be 47 minutes. (See Figure III-6.)

The fare structure includes the current base fare and transfer cost of $0.60 with a $0.15 surcharge to be collected at the airport.

Capital costs include track extension and station construction.

b. CTA Rapid Transit Extension With No Intermediate Station

Scheme R-2

The service characteristics and fares of this scheme are identical to those in Scheme R-1 except that the 3 stations between Jefferson Park and O'Hare are eliminated. Access time is reduced to 45 minutes. (See Figure III-7.)

Capital costs include track extension and station construction at O'Hare.

c. C&NW Spur to the Kennedy Expressway Median

Scheme R-3

Under this scheme, the existing C&NW Commuter line right-of-way would be used by C&NW trains to Jefferson Park where a spur would connect with the median of the Kennedy Expressway. Airport trains from the CBD would run non-stop from the CBD's C&NW Station to Jefferson Park and 3 intermediate stops would be made before reaching O'Hare. The peak hour headway time would be 10 minutes, with off-peak headways of 30 minutes. The one-way fare for this service would be $0.75, with a 62 minute access time. (See Figure III-8.)

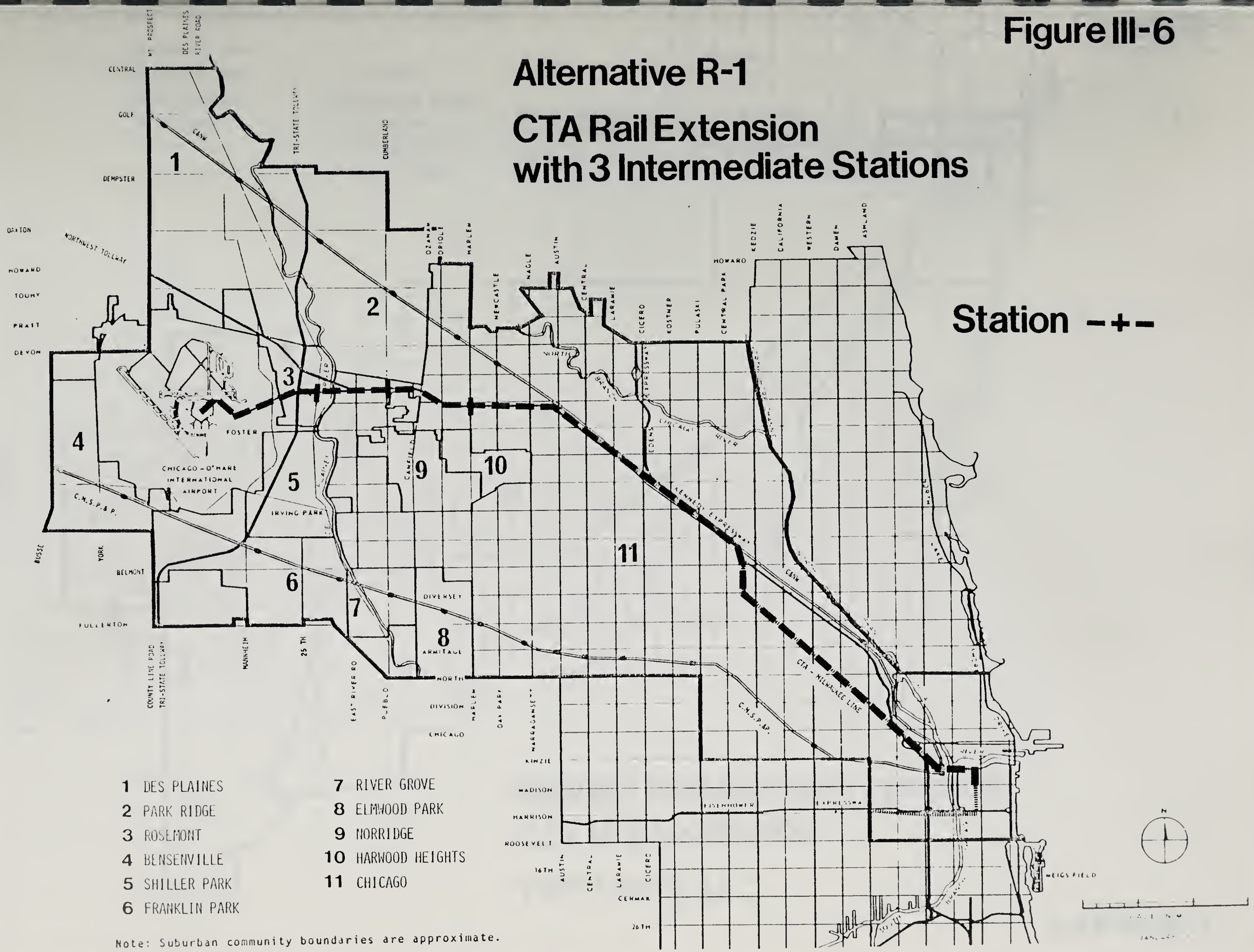
Costs incurred under this scheme include construction of the spur, stations, and additional trackage in the CBD and from Clinton Street to Jefferson Park, adjacent to the existing Northwest Line of the C&NW.

Figure III-6

Alternative R-1

CTA Rail Extension with 3 Intermediate Stations

Station –+–

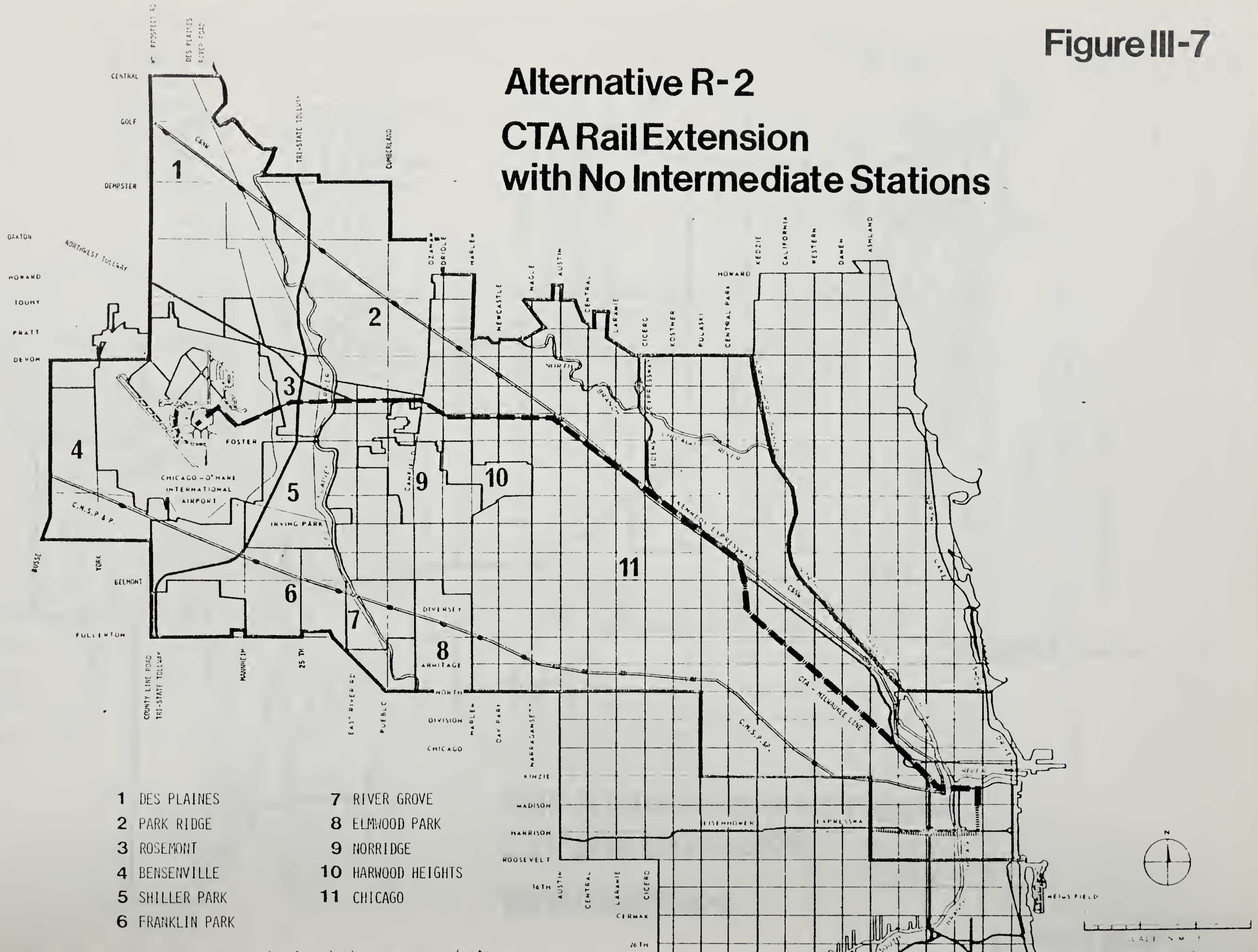


1 DES PLAINES
2 PARK RIDGE
3 ROSEMONT
4 BENSENVILLE
5 SHILLER PARK
6 FRANKLIN PARK
7 RIVER GROVE
8 ELMWOOD PARK
9 NORRIDGE
10 HARWOOD HEIGHTS
11 CHICAGO

Note: Suburban community boundaries are approximate.

Figure III-7

Alternative R-2
CTA Rail Extension with No Intermediate Stations



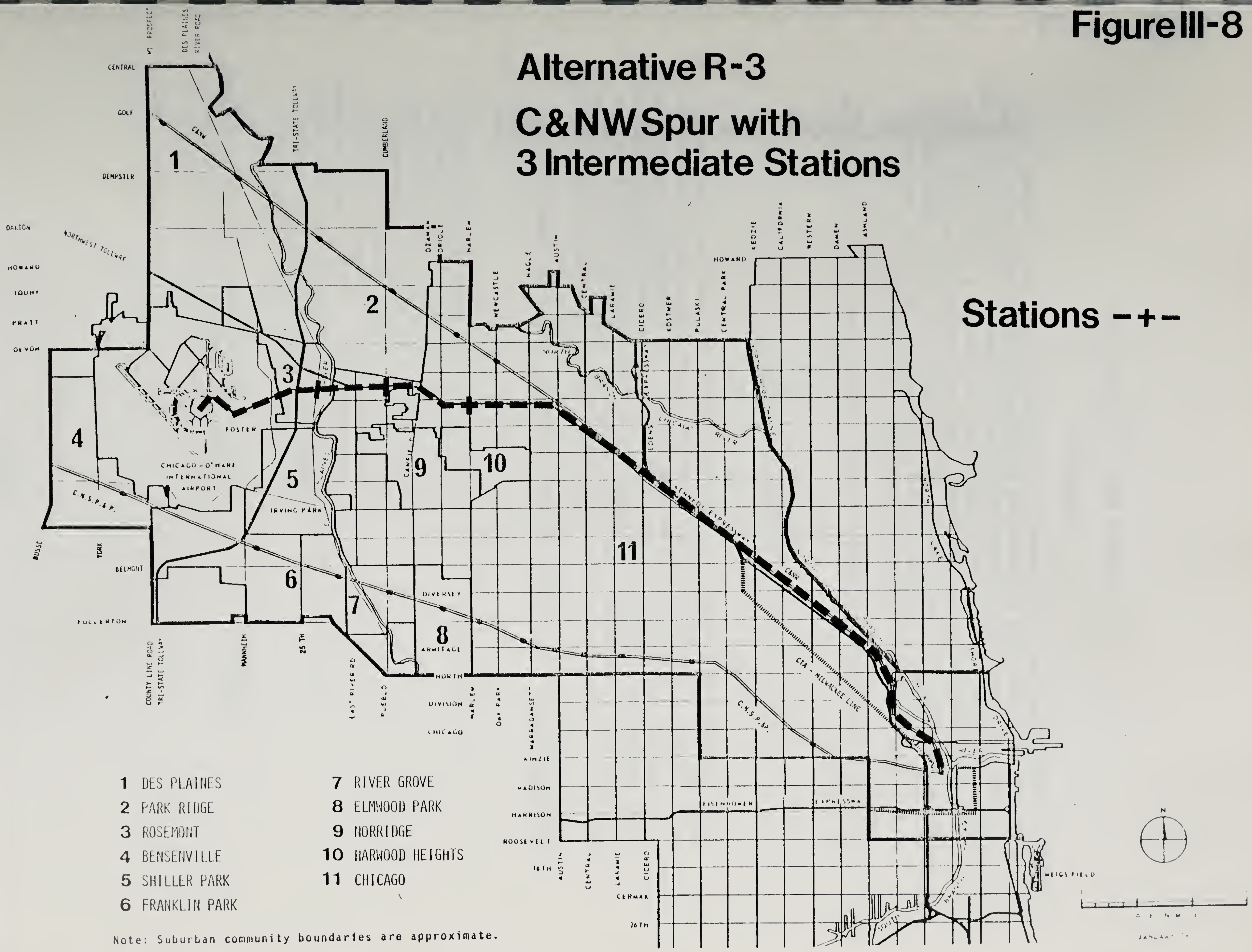
1 DES PLAINES
2 PARK RIDGE
3 ROSEMONT
4 BENSENVILLE
5 SHILLER PARK
6 FRANKLIN PARK
7 RIVER GROVE
8 ELMWOOD PARK
9 NORRIDGE
10 HARWOOD HEIGHTS
11 CHICAGO

Note: Suburban community boundaries are approximate.

Figure III-8

Alternative R-3

C&NW Spur with 3 Intermediate Stations



1 DES PLAINES
2 PARK RIDGE
3 ROSEMONT
4 BENSENVILLE
5 SHILLER PARK
6 FRANKLIN PARK
7 RIVER GROVE
8 ELMWOOD PARK
9 NORRIDGE
10 HARWOOD HEIGHTS
11 CHICAGO

Note: Suburban community boundaries are approximate.

d. Milwaukee Road - Soo Line Spur

Scheme R-4

This scheme represents the operation of Milwaukee Road trains between the CBD's Union Station and O'Hare using existing Milwaukee Road tracks to Franklin Park. A spur would be constructed from this point in right-of-way to the Soo Line Railroad to the Access Road median and then to a station at O'Hare. No intermediate stations are included. Peak hour scheduling would be on 10 minute headways with a base headway of 30 minutes, and trains would operate on a non-stop basis. The fare for this service would be $0.75, and access time in each direction averages 64 minutes. (See Figure III-9.)

Capital costs would be incurred for track extension and station construction at O'Hare.

B. PRELIMINARY ANALYSIS

In this section of Chapter III, the alternatives are examined to determine which most suitably fulfill the transportation, economic, environmental, and social needs of the study area and the region. The alternatives examination is conducted in two stages. First, alternatives are modally segregated, compared, and the most suitable alternatives of each mode are selected for the second and final analysis. The first comparison is made on a list of criteria which are considered essential to the viability of the airport access service.

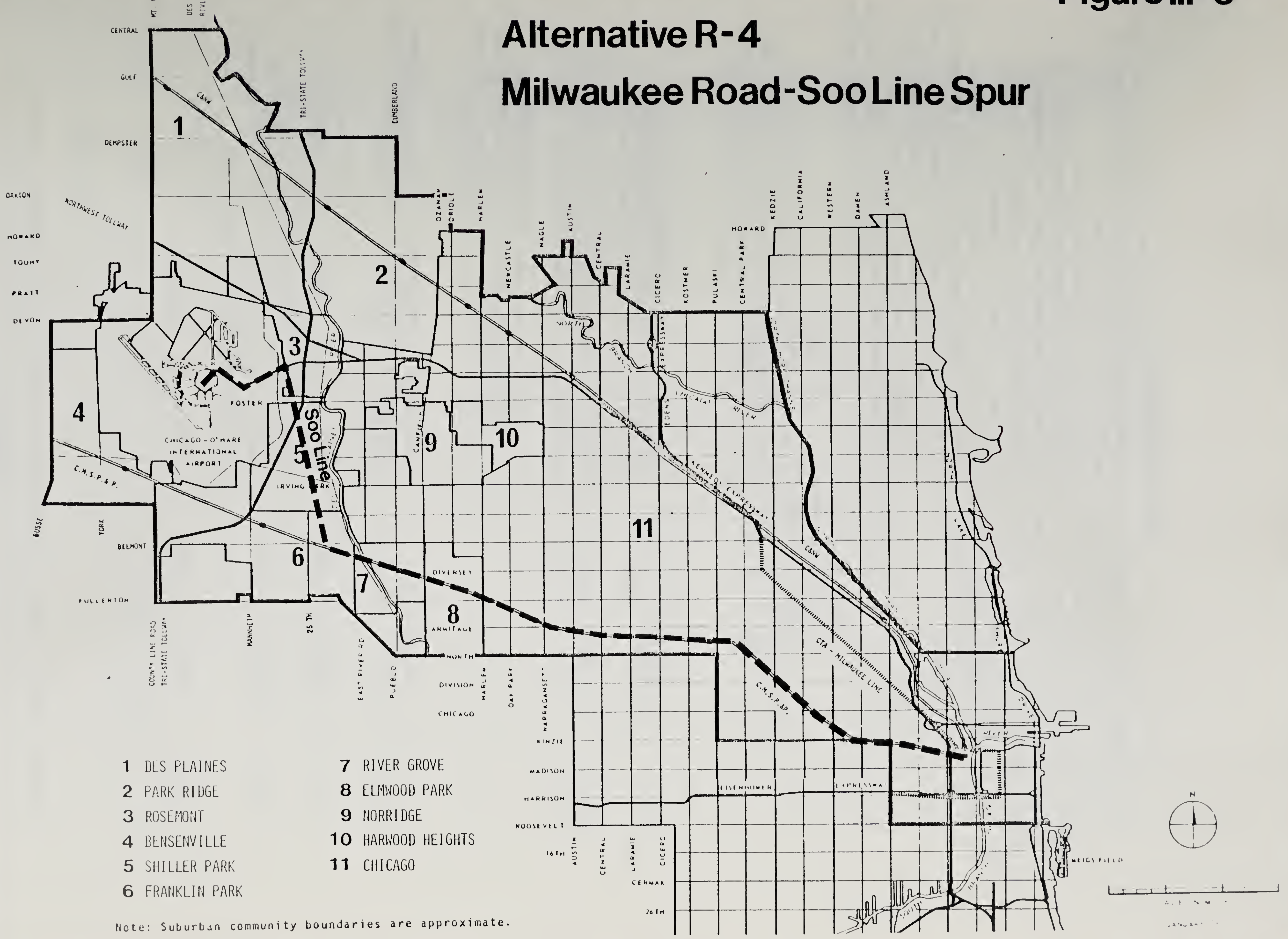
The selected criteria include service, patronage, and cost elements, as explained below.

1)	*TRAVEL TIME:*	*Travel time is an important characteristic of any travel service, but is especially important for an airport access service. Travel time to the airport was measured as it was felt that a greater time constraint existed for passengers travelling in this direction. Travel time is measured from the Palmer House Hotel, in the center of the CBD, to the Baggage Claim Area at Terminal No. 2 at O'Hare Field.*
2)	*RELIABILITY OF SERVICE:*	*An airport access service must be available in convenient quantity and with high reliability to attract the airline passenger.*

Figure III-9

Alternative R-4

Milwaukee Road-Soo Line Spur



Reliability of service is important to every other transit user who has limited time to complete a transit trip.

Reliability of service measures both the expected frequency of on time arrival and the frequency of service.

3)	*SYSTEM COMPATIBILITY:*	*Compatibility of a transit system improvement with the system itself is essential to insure operational flexibility, to reduce the complexity of maintenance procedures, to retain a high distribution capability, and to retain the potential for further system modification.*
4)	*PATRONAGE:*	*Patronage is an essential criterion for determining alternatives which provide the most attractive service. Patronage figures given are for an average weekday in 1985.*
5)	*USER GROUPS SERVED:*	*The number of user groups served by an alternative indicates how widespread the social, economic, and environmental benefits of a given alternative are; and, hence, how effective it is. Six potential user groups have been identified. They are:* *1) Airline Passengers* *2) Airport Employees* *3) Airport Visitors* *4) CBD Commuters* *5) Reverse Commuters* *6) Expressway Drivers*
6)	*CAPITAL COST:*	*Capital cost indicates the fiscal resources required to establish a given transportation service.*
7)	*OPERATING COST:*	*This criteria shows the fiscal resources required to operate a transit service. Both this and the capital cost criterion provide an indication of the effectiveness of proposed transit investments.*

1. Bus Alternatives

In Table III-1, the five bus alternatives are compared to each other on the basis of the seven criteria listed above. Under each criteria, a forced choice is made dependent on the alternatives' performance -- with 1 assigned to the alternative with best performance and 5 to the alternative with worst performance. Final ranking will be established by adding the criteria scores of each alternative and selecting the lowest score. Wherever possible, quantitative judgements are made to determine an alternatives rank and are included. Following the table, an evaluation is presented. Bus scheme abbreviations are again presented for reference.

TABLE III-1
BUS ALTERNATIVES COMPARISON

Scheme B-1 - No-Build Alternative
Scheme B-2 - Modified No-Build
Scheme B-3 - CTA Bus from C&NW
Scheme B-4 - CTA Bus from Milwaukee Road
Scheme B-5 - Exclusive Bus Lanes

	B-1		B-2		B-3		B-4		B-5	
1. Travel Time *	(59 min. Off Peak) (67-76 min. Peak)	2	(59 min. Off Peak) (67-76 min. Peak)	2	(88 min Off Peak) (97 min. Peak)	5	(76 min. Off Peak) (83 min. Peak)	4	(59 min. Off Peak) (64 min. Peak)	1
2. Reliability of Service		2		2		4		5		1
3. System Compatibility		1		1		1		1		1
4. Patronage (Pass/day)	(3,150)	2	(3,090)	3	(2,060)	4	(1,750)	5	(3,710)	1
5. User Groups Served	(3)	1	(3)	1	(3)	1	(3)	1	(3)	1
6. Capital Cost (1978 prices)	(0)	1	(0)	1	($10K)	3	($110K)	4	($25M)	5
7. Operating Cost (Annual 1978 prices)	($896)	4	($822)	3	($536)	2	($437)	1	($938)	5
TOTAL		13		13		20		21		15

K = 1,000
M = 1,000,000

*Eastbound off-peak travel times for these alternatives are: B-1, 64 min.; B-2, 59 min.; B-3, 103 min.; B-4, 121 min.; B-5, 59 min.

The alternatives evaluation presented below concentrates on those criteria which best indicate the difference among the schemes. Thus, since System Compatibility and User Group Served do not indicate any differences among the bus alternatives, they are treated briefly.

a. No-Build

Scheme B-1

Travel time for Scheme B-1 is among the shortest for bus alternatives. The expected frequency of on-time arrivals for Scheme B-1 is handicapped by the fact that the bus operates on city streets, on the Kennedy Expressway, and on the Lower Level Roadway at O'Hare. As a result, buses mix with regular traffic for the entire trip from Jefferson Park to the airport and are susceptible to delays from traffic congestion and weather.

Frequency of service, on the other hand, is among the best for bus alternatives since the bus runs 24 hours a day, with 15 minute daytime headways, 30 minute morning and evening headways, and 60 minute night headways. The rail transit segment of the trip from the CBD to O'Hare also operates round the clock with shorter headways than the airport bus.

This bus alternative provides service to the second highest number of patrons and is the only one to provide transit service to the airport Cargo Area.

No capital cost is incurred with this alternative; however, Scheme B-1 is the second most expensive bus alternative to operate. Its relative high cost results from the round the clock operation and the use of four buses during peak hours required for Cargo Area service.

b. Modified No-Build

Scheme B-2

Scheme B-2 has many of the same characteristics as Scheme B-1. Travel time to the airport, reliability of service, and capital cost are identical. Scheme B-2 has a slightly lower level of patronage ranking third among bus alternatives, since it does not serve the airport Cargo Area. Scheme B-2's operating cost is third highest among bus alternatives. B-2 requires only three buses during the peak hours, because eliminating Cargo Area stops results in a shorter round trip time and faster turnaround in bus operation.

c. CTA Bus From C&NW

Scheme B-3

Much of Scheme B-3's higher access time is consumed in waiting, since headways for the rail leg of the trip on the C&NW are longer than on the CTA.

Scheme B-3 buses also operate on arterial streets, on the Kennedy Expressway, and on the Lower Level Roadway at O'Hare, exposing the service to delay on the roadway network. B-3's frequency of service is relatively low since it does not operate between 1:00 a.m. and 5:45 a.m. Headways on the rail leg of the trip vary from 5 to 20 minutes during the weekday peak hours; 1 hour in off-peak hours, in the reverse commuter direction during peak hours, and on Saturday; and 2 hours on Sunday. Bus headways would be 15 minutes in peak hours, and 30 minutes at other times the service is in operation, except Sunday when the bus would run every hour.

Patronage for this alternative is comparatively low. A small capital cost is incurred with this scheme for a bus shelter and signs at the C&NW Park Ridge station, the point of bus-rail interface.

Operating cost for this scheme is significantly lower than for schemes previously discussed. Fewer bus operations are required under Scheme B-3 due to longer headways, periods during which the service is not provided, and lack of service to the Cargo Area.

d. CTA Bus From Milwaukee Road

Scheme B-4

As was the case with the previous alternative, much of Scheme B-4's higher access time stems from longer headways on the commuter rail leg of the trip than on the CTA.

Scheme B-4's regularity of service suffers from the same problems as were inherent in Scheme B-3. The frequency of service, however, is lowest of all alternatives since service headways on the Milwaukee Road are longer than on either the CTA or the C&NW. Milwaukee Road headways vary between 5 and 30 minutes during peak hours; between 1 and 3 hours in off-peak periods, in the reverse commuter direction during peak hours, and on Saturdays; and between 3 and 5 hours on Sunday. Bus headways for this scheme are the same as for Scheme B-3.

Estimated ridership for this alternative is the lowest of all bus schemes.

Some capital is required to construct a bus turnaround, a bus shelter, and to provide signs at the Milwaukee Road Franklin Park Station.

Scheme B-4's operating cost, lowest among the bus alternatives, reflects the low level of service provided by this alternative.

e. Exclusive Bus Lanes in the Kennedy Median

Scheme B-5

Scheme B-5's service characteristics are similar to those of the first two alternatives. Peak hour travel time to the airport is lower and frequency of service is the same. In this scheme, buses would run on exclusive bus lanes in the median of the Kennedy Expressway for most of the trip from the Jefferson Park Terminal to the airport, and would necessarily use city streets and the regular lanes of the Kennedy for access to the bus lanes and would use the regular airport roadway for airport access. Nonetheless, operation on the exclusive bus lanes does give this bus scheme an advantage with respect to frequency of on-time arrival.

Patronage for Scheme B-5 is the highest among bus alternatives, approximately 17% higher than the next most used scheme. Capital costs required to construct the exclusive bus lane system are over 200 times as great as the next most capital intensive bus alternative.

Operating costs for this alternative are increased by maintenance operations on the bus lanes themselves.

2. Conclusions

Schemes B-3 and B-4 have both been eliminated from further consideration, based on their unfavorable rankings. Their overall levels of service are low, and they have longer travel times, lower patronage, and lower reliability of service than other alternatives. They both prove inadequate when measured against the other bus options.

Although Scheme B-5 provides the highest overall level of service, it does so at an extremely high capital cost which is not commensurate with the increase in service provided. Therefore, it has been eliminated from further analysis.

Schemes B-1 and B-2 provide essentially the same service. Although Scheme B-2's patronage is lower, that is compensated for by a lower operating cost. Nonetheless, Scheme B-1 has been selected for further evaluation. Selecting both alternatives would be redundant given their similarities. Scheme B-1 has the advantage of being in service at this time and, in the final analysis, will provide a benchmark against which the advantages and disadvantages of the rail mode can be measured.

3. Rail Alternatives

The four rail access alternatives will be judged in the same manner as the bus alternatives. Since four rail alternatives are being evaluated, the forced choice ranking scale in this case is 1-best, 4-worst.

The rail alternative abbreviations are presented below, followed by the rail alternatives comparison table:

TABLE III-2
RAIL ALTERNATIVES COMPARISON

Scheme R-1 - CTA Rail Extension with 3 Intermediate Stations

Scheme R-2 - CTA Rail Extension with No Intermediate Stations

Scheme R-3 - C&NW Spur to the Kennedy Expressway Median

Scheme R-4 - Milwaukee Road - Soo Line Spur

	R-1		R-2		R-3		R-4	
1. Travel Time (peak & off-peak)	(47 min.)	2	(45 min.)	1	(62 min.)	3	(64 min.)	4
2. Reliability of Service		1		1		3		4
3. System Compatibility		1		1		3		4
4. Patronage (pass./day)	(36,500)	1	(24,700)	3	(35,000)	2	(20,200)	4
5. User Groups Served	(6)	1	(3)	3	(6)	1	(3)	3
6. Capital Cost* (1978 prices)	(175.7M)	3	($119.9M)	2	($207.5M)	4	($115.3M)	1
7. Operating Cost (Annual 1978 prices)	(12.6M)	2	($10.4M)	1	($14.9M)	3	($15.4M)	4
TOTALS		11		12		19		24

K = 1,000
M = 1,000,000

*Capital Cost includes in each case the cost of rail cars which is not part of construction expenditure.

a. CTA Rail Extension with 3 Intermediate Stations

Scheme R-1

Travel time for Scheme R-1 is relatively low, second lowest of the rail schemes.

Reliability of service for this scheme is among the highest for rail mode alternatives. The extension would operate on exclusive rail right-of-way with no at-grade roadway crossings or at-grade intersections with other rail lines. It would thus not be exposed to delays caused by intersecting vehicular or rail traffic. Frequency of service for this alternative is also among the highest. Headways range from 2½ minutes during peak hours to 5 minutes for remaining parts of the day, except between 1:00 a.m and 5:00 a.m. when trains operate at 15 minute headways.

Since this alternative represents an extension to the existing CTA rapid transit system, the extension's physical characteristics would be compatible with the existing system. Transit cars used in the operation of the system would likewise be compatible with those now is service with the CTA.

Patronage for Scheme R-1 is the highest of any rail alternative. Patronage for this scheme includes ridership from all six potential user groups with about 68% of the riders coming from the three airport related user groups.

Capital cost for Scheme R-1 is the second highest among the four rail alternatives being studied, falling about midway between the least and the most expensive. It should be noted here that the capital cost figures for this or any other rail alternative includes a cost for additional transit cars which would be required to operate the system.

Like capital cost, operating cost for Scheme R-1 is the second highest among rail alternatives.

b. CTA Rail Extensions with No Intermediate Stations

Scheme R-2

The travel time for Scheme R-2 is the shortest of the rail alternative access times. The travel speed is a reflection of the non-stop service provided between the Jefferson Park terminal and O'Hare Airport.

The reliability, including frequency of service, and the system compatibility of this scheme are the same as for Scheme R-1.

Patronage for Scheme R-2 is the second largest among the rail options. The lower ridership results from the lack of intermediate stations, which, in turn, eliminates service to three of the six potential user groups.

Both capital and operating costs for Scheme R-2 are the lowest in this modal group. This results from the absence of the cost of constructing, operating, and maintaining the three intermediate stations.

c. C&NW Spur to the Kennedy Expressway Median

Scheme R-3

Travel time for this rail option is significantly longer than for either of the first two alternatives. Travel time for R-3 is long enough to make existing non-rail access modes, i.e., taxi or airport bus, competitive under this criterion.

Reliability of service is somewhat lower for this alternative. Between the CBD and O'Hare Airport, trains would necessarily pass through two highly congested points, the Lake Street and Clinton Street interlockings on the C&NW right-of-way. This would require increasing the sophistication of the two interlockings to accommodate the additional traffic, and thereby increase the risk of operational delay due to rail line congestion or equipment failure. Frequency of service on a Scheme R-3 line would be lower than on a CTA extension service, but would be adequate since the R-3 airport train would serve only three stations between the CBD and O'Hare. These stations would be at the same location as the intermediate stations of Scheme R-1. Headway would be 10 minutes during peak and 30 minutes during off-peak hours.

This alternative is not compatible with the existing C&NW system. Operation of Scheme R-3 requires the purchase of 22 pairs of gas turbine powered vehicles to the existing C&NW commuter fleet. Since all C&NW commuter trains are diesel powered, maintenance and operation procedures would be significantly different.

Patronage for this alternative is high, second highest for this modal group. The provision of three intermediate stations results in all six potential user groups being served. The difference in patronage between this scheme and Scheme R-1 results wholly from lower ridership in the airport oriented user groups. This lower airport oriented ridership stems largely from the increased travel time for R-3 over R-1.

Capital cost, which includes the cost of new cars, is highest among rail options. The necessity of adding tracks in C&NW right-of-way between Clinton Street and Jefferson Park and of increasing the sophistication of the two interlockings increases capital cost above what would be required for simply extending trackage from the C&NW Jefferson Park station to the airport.

Operating costs for this alternative are also very high because of the increased maintenance associated with track extension and gas turbine transit cars.

d. Milwaukee Road - Soo Line Spur

Scheme R-4

Scheme R-4 has the longest rail travel time. Reliability of service for this scheme is relatively low, as Milwaukee Road trackage between Union

Station and Western Avenue handles a large number of train movements and crosses at-grade intersections both with a rail line and with roadways. This could adversely affect the on-time handling of airport access operations. Frequency of operation for this scheme is the same as that for Scheme R-3, with 10 minute peak and 30 minute off-peak headways.

Since special gas turbine cars are required for the operation of this scheme, the same system compatibility problems exist for this alternative as would exist for the previous alternative.

Patronage for R-4 is the lowest among the rail options. As with Scheme R-2, the three airport oriented user groups are served, but fewer of each group are served than for any other rail option. No non-airport oriented riders are served.

4. Conclusion

Schemes R-2 and R-4 provide essentially the same service, i.e., a rapid transit service designed to serve only airport oriented travellers. Substantial differences exist, however, in both levels of service and costs. R-4 has a significantly longer access time, lower reliability of service, lower patronage, and higher operating costs. Since R-2 provides the same type of service as R-4 but does it more effectively, at a higher level and for a lower operating expenditure, Scheme R-4 has been eliminated from further consideration.

Schemes R-1 and R-3 also provides generally the same type of service, which is an airport access service combined with a rapid transit service designed to satisfy the needs of commuters in the Kennedy Expressway Corridor. Scheme R-3, however, does not provide as fast or as reliable a service as Scheme R-1 and requires the use of more financial resources in terms of both capital and operating costs than R-1. Patronage for these schemes is nearly the same. Since Scheme R-3 provides a lower level of service at a higher cost with no corresponding advantage in numbers or types of patrons served, it has been eliminated from further consideration.

Schemes R-1 and R-2 compared favorably in the initial screening. R-1 attracted a substantially greater patronage and served a larger number of user groups. R-2, on the other hand, showed advantages in capital and operating costs. Since these two alternatives provide different levels of service with correspondingly divergent overall capital and operating costs, and since in the initial screening the alternatives ranked similarly, both Schemes R-1 and R-2 will be included in the final analysis.

C. ANALYSIS OF SELECTED ALTERNATIVES

The second phase of the alternatives analysis involves comparing and contrasting in greater detail the three schemes chosen in the initial screening process. Twenty criteria are used in this phase which cover areas of environmental impact, service characteristics, and system costs.

Table III-3 presents a forced choice ranking of the bus and rail alternatives following the 1-best, 3-worst format. The accompanying narrative explains the differences among the schemes by criterion and describes the factors affecting the given rankings.

1. Construction

In relation to the other two alternatives, Scheme R-1 would be the most disruptive during construction. Alternative B-1 requires no construction, and would, therefore, result in no disruption. Both rail alternatives would, on the other hand, result in the off-peak hour closing of the inside shoulder and lane of the Kennedy Expressway and cause disruption on the Northwest Tollway and on arterial streets in the vicinity of the Rosemont Yard during construction. Scheme R-1 would, in addition, cause minor disruption of overpass bridges at two intermediate stop locations. Also some disruption of local traffic would occur during the construction of the park-n-ride facilities and associated roadway and ramp improvements adjacent to the three intermediate stations.

Short-term employment opportunities are the greatest with Scheme R-1. The construction of the three intermediate stations and the three park-n-ride facilities would require more man hours of labor than the simple transit extension plan, Scheme R-2. Since Scheme B-1 involves no construction, no short-term employment opportunities would be created.

2. Transit Service

With regard to the total travel time savings of all prospective user groups, Scheme R-1 ranks the highest of the identified alternatives. Although the inclusion of the three intermediate stations extends the travel time on the rail extension by approximately 2 minutes, there is a substantial net savings in travel time for CBD commuters, reverse commuters, and expressway drivers who utilize the park-n-ride facilities and transit service. The travel time savings accrued by Scheme R-1's non-airport oriented users results in R-1's high rank under this criterion, since neither B-1 nor R-2 serves these user groups.

Estimates of patronage for Scheme R-1 are the highest of any transit alternative - with daily ridership figures averaging 36,500, as compared to 24,700 for Scheme R-2, and only 3,150 for Scheme B-1. (More sophisticated patronage figures are presented in Chapter IV.)

In relation to the other alternatives, Scheme R-1 serves the largest number of specified user groups. As this scheme includes facilities specifically designed to serve expressway drivers, CBD and reverse commuters, all six potential user groups are accommodated as opposed to only three groups served by Scheme R-2 and three groups by Scheme B-1.

Both rail alternatives exhibit the same degree of service reliability. Scheme R-1 and R-2 would operate on exclusive rail right-of-way with no at-grade road crossings or at-grade intersections with other rail lines. Unlike Scheme B-1, these alternatives would not be subject to delays caused by traffic congestion or inclement weather.

TABLE III-3
FINAL ALTERNATIVES ANALYSIS

CRITERION	SCHEME B-1		SCHEME R-1		SCHEME R-2	
1. Construction						
Disruption		1		3		2
Employment	(None)	3	(21Kman-mo)	1	(15Kman-mo)	2
2. Transit Service						
Travel Time Savings	(None)	3	(7.5Khr/dy)	1	(5.9Khr/dy)	2
Patronage	(3,150)	3	(36,500)	1	(24,700)	2
User Groups Served	(3)	3	(6)	1	(3)	2
Transit System Accessibility	(No Change)	2	(3 new pts)	1	(No Change)	2
Reliability		3		1		1
3. Vehicular Traffic						
Local Traffic Congestion		2		2		1
Regional Traffic Relief		3		1		2
4. Land Use and Development		3		1		2
5. Air Quality						
Local Air Quality		1		3		1
Regional Air Quality Control		3		1		2
6. Noise Levels		1		3		2
7. Energy Conservation		3		1		2
8. Social Effects						
Accessibility to Jobs & Social Services		2		1		2
Safety & Security		2		3		1
9. Economics		3		1		2
10. Costs						
Capital	(0)	1	(135.7M)	3	(92.4M)	2
Operating	(797K)	1	(12.6M)	3	(10.4M)	2
Operating/ Passenger	(0.75)	1	(1.07)	2	(1.24)	3
		44		34		37

K = 1,000
M = 1,000,000

Of the three transit alternatives, Scheme R-1 ranks the highest with respect to regional transit system accessibility. The three intermediate stations, in addition to the new terminal station at O'Hare, will provide direct transit service to a large portion of the metropolitan region whose transit needs are presently unmet.

3. Vehicular Traffic

Local traffic congestion would be lowest with Scheme R-2. Compared to Scheme B-1 which does not have the capacity to satisfy the airport's projected 1985 ground access needs, Scheme R-2's impact on vehicular traffic congestion at O'Hare would be positive and significant. The absence of intermediate stations and park-n-ride facilities in Scheme R-2 would result in no changes to traffic patterns or volumes in areas adjacent to the expressway between the Jefferson Park terminal and O'Hare Airport.

Scheme R-1 ranks highest among the alternatives in providing regional traffic relief. The addition of a second mode of travel with multiple entry points in the Kennedy Expressway Corridor would allow the Corridor to handle airport oriented traffic more easily and would result in a decreased number of auto trips to the airport via the expressway as compared to Scheme B-1. The inclusion of intermediate stations and park-n-ride facilities would divert a significant number of CBD oriented commuters in the Kennedy Corridor from auto to rapid transit, thereby providing regional advantages over Scheme R-2.

4. Land Use and Development

Scheme R-1 would have the most beneficial impact under this criterion. Continued implementation of the existing service, scheme B-1, would have no beneficial impact on existing land use or development potential within the study area. Scheme R-2 would benefit land use and development in the Central Area through improved access to the airport. Scheme R-1 would add to this the positive impacts on development potential near the three intermediate stations by providing rapid transit access which does not presently exist.

5. Air Quality

Local air quality in areas adjacent to the expressway would have the least adverse impact from Scheme R-2. No increased vehicular exhaust emissions associated with the use of Scheme R-1's intermediate stations or parking facilities would occur, and Scheme R-2 would lower vehicular emissions at the airport, in contrast to Scheme B-1.

Of the three alternatives, Scheme R-1 will have the most beneficial impact on regional air quality. The extension of the rapid transit system to O'Hare and accompanying intermediate stations and park-n-ride facilities assist the U.S. Environmental Protection Agency's Transportation Control Plan for the attainment and maintenance of air quality standards regionwide by removing vehicles from the CBD and the Kennedy Expressway.

6. Noise Levels

Of the three alternate proposals, Scheme R-1 will generate the greatest amount of additional noise within the Kennedy Expressway corridor. Although increased noise levels are associated with the movement of trains and with movement of feeder buses in Scheme R-1 (as opposed to train movement only in Scheme R-2), the overall effects of that increase will not be significant given the location of the transit line within an established noise corridor and the intermittent nature of rail transit noise. Noise generation would also occur in the area of the three park-n-ride garages during their peak hours of use, although expressway noise would have a masking effect on this noise also.

No significant noise impacts are associated with Scheme B-1 since noise generated by airport bus movements are masked by traffic noise on the expressway and aircraft noise at the airport.

7. Energy Conservation

Scheme R-1 includes more specific measures designed to conserve scarce fossil fuels than either of other transit alternatives.

Specific elements designed to conserve energy include the transit extension to the airport itself, which would reduce the dependence on autos and buses for airport access, and the intermediate stations and park-n-rides, which would offer expressway drivers easy and convenient means for changing to transportation modes not dependent on gasoline or diesel fuel.

Scheme R-2 would include only the first conservation element mentioned for R-1, the transit extension itself. Continued implementation of Scheme B-1 would result in a greater consumption of gasoline and diesel fuel than either R-1 or R-2, because the only airport access mode would continue to be the motor vehicle.

8. Social Effects

In relation to the other transit alternatives, Scheme R-1 affords the greatest accessibility to jobs and social services. The three intermediate stations located between Jefferson Park and O'Hare Airport will not only provide needed increased accessibility from the residential communities to O'Hare and Chicago's Central Area, but will also greatly improve access to jobs within the Northwest portion of the study area from all sections of the metropolitan area.

Scheme R-2 would provide improved access only to jobs at O'Hare Airport. It would, however, do nothing to improve access to or from areas along the seven mile rapid transit route. People would continue to rely on automobiles and CTA and suburban buses for both internal public transportation and for access to the rapid transit system. As a result, jobs and services available in those areas or in other areas of the region would be no more accessible after project implementation than before.

Scheme B-1 not only has the disadvantage of Scheme R-1, but also requires a modal switch and has a reduced capacity to allow people access to job opportunities at O'Hare Airport.

Scheme R-1 inherently has a higher statistical safety and security risk than either B-1 or R-2. Simply providing intermediate stations and park-n-rides provides locations where crime and traffic accidents could occur. It should be noted, however, that the Northwest Line is the safest on the CTA Rapid Transit System, and that the existing rapid transit segment in the Kennedy median is the safest on the Milwaukee line. The high security on the Kennedy line is a reflection of the low-crime rate in the areas through which it passes, as most transit crimes committed in stations are by persons living in areas adjacent to these stations.

Safety and security risks would be lowest for Scheme R-2. Vehicular safety problems would be less since this rail alternative neither operates on expressway roadways, as does B-1, nor results in increased local traffic movements, as does R-1. Additionally, security risks on the transit network would be inherently lower since no new parking or station areas are part of this scheme and no modal switch is required for the airport trip.

9. Economics

Scheme R-1 would have the greatest economic impact in areas along the transit route. In addition to serving the greatest number of patrons and providing employment and social opportunities to the O'Hare area and Northwest section of Chicago, the project would also have a positive effect on the economic vitality of two of Chicago's most viable commercial centers - the Central Area and the O'Hare area. By providing improved access from the Northwest portion of Chicago and O'Hare, the project would strengthen the position of the CBD as the focus of the regions commercial, entertainment, social, and cultural activity. The extension with the three intermediate stations would further strengthen employment opportunities and development potential in the expanding O'Hare commercial and office center, and in the vicinity of these intermediate stations.

Scheme R-2 would have a beneficial economic impact on the Chicago CBD, similar to that mentioned for R-1. No economic impact would be felt in areas along the transit extension, however, since no changes in level of service or accessibility would occur.

None of the above mentioned economic benefits would occur under the continued implementation of Scheme B-1.

10. Costs

Scheme R-1 would require the largest capital expenditure of the three selected alternatives. The additional cost of this alternative over Scheme R-2 results from the construction of the three intermediate stations and three adjacent park-n-ride facilities. Scheme B-1 has no capital expenditure requirements.

Operating costs for Scheme R-1 would be the highest of the three alternatives. additional cost over Scheme R-2 would be the result of maintaining and operating the three intermediate station complexes.

When operating costs are reduced to an index measuring how much each scheme would cost to operate per passenger served, Scheme R-2 becomes the most expensive of the three.

11. Conclusion

Scheme R-1, the CTA extension with three intermediate stations, is the recommended alternative, as reflected by its rank in the analysis. Among the three final alternatives, Scheme R-1 is the only one which satisfies all of the transportation requirements for a transit extension to the airport. It provides the most comprehensive service for all user groups, generates the highest ridership figures, provides frequent and dependable service, and results in the greatest overall travel time savings. Additionally, it provides the most favorable land use, and will have the most beneficial impact on regional traffic patterns and regional air quality.

Naturally, tradeoffs must be made to reap the benefits that can be accrued from Alternative R-1. As it is the largest system of the three, it creates the greatest amount of disruption during construction. It results in a impact on air quality and noise levels in local areas near the Kennedy Expressway Corridor, and requires the greatest use of financial resources. The presence of these negative effects, however, does not outweigh the need to provide a high quality transit service through the Kennedy Corridor.

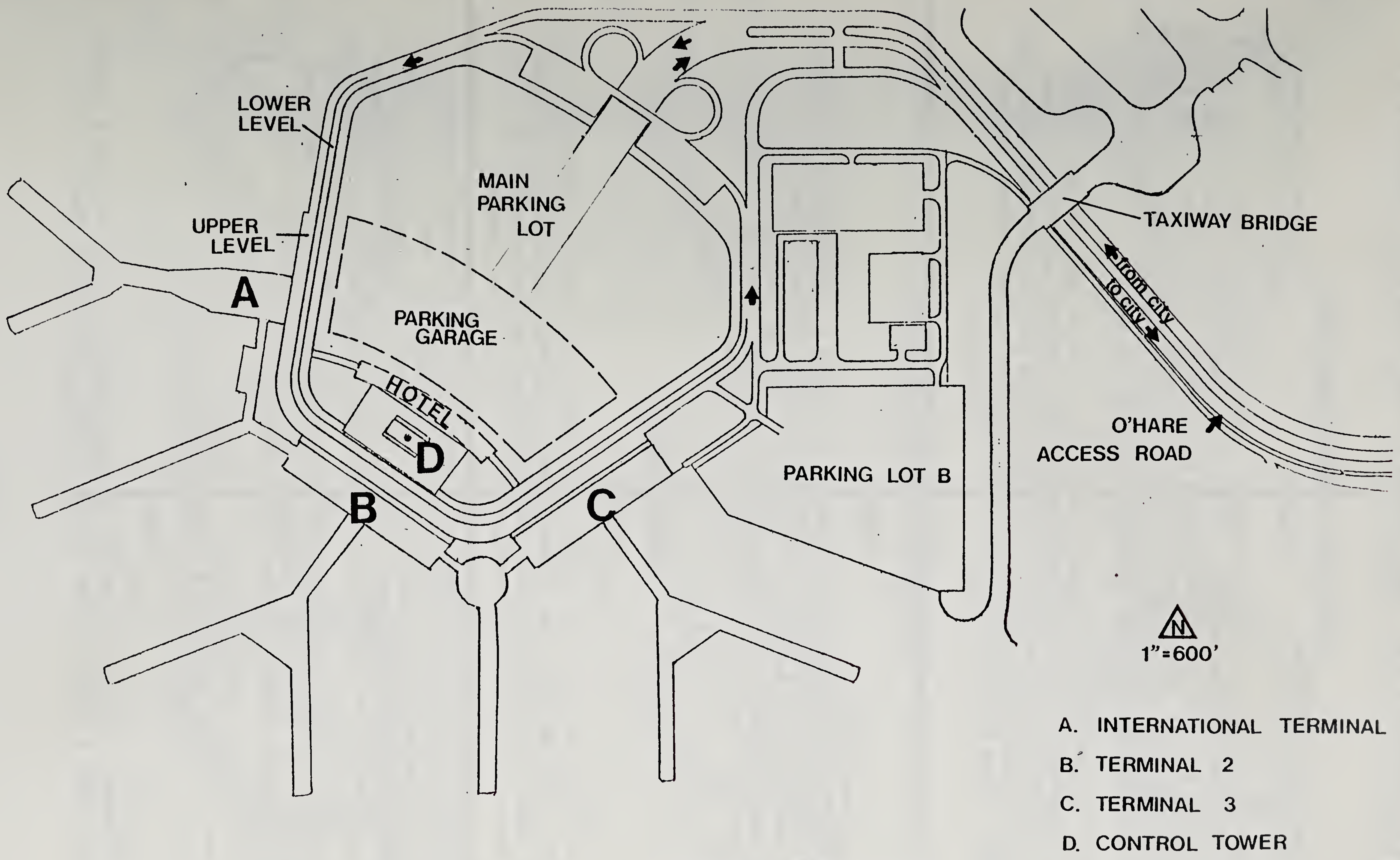
D. AIRPORT TERMINAL DESIGN ALTERNATIVES

Several station configurations have been proposed for the O'Hare terminal, due to the size of the complex and the desire to provide adequate and convenient access to it for rapid transit patrons.

The O'Hare complex, which encompasses approximately 80 acres, consist primarily of three terminal buildings, the air traffic control tower, the O'Hare Hilton Hotel, a six-story parking garage, and two open parking lots. The O'Hare Access Road circles the complex as a one-way roadway. It provides a spur to the main garage and parking lot, then becomes bi-level with the upper level serving the ticket counter/concourse (departure) level of the terminals and the lower level serving the baggage claim (arrival) areas. The upper level roadway also provides access to Parking Lot B and the lower level serves the hotel. (See Figure III-10.)

The alternative station designs investigated include three subway and two elevated schemes. A summary of each is presented below, followed by a forced choice ranking and explanation of the scores given each alternative.

Figure III-10



O'Hare Airport

1. Single Level Terminal Loop Subway

Scheme 1

In this alternative, the rapid transit system approaches O'Hare Airport in the O'Hare Access Road median. CTA trains enter a subway west of the taxiway bridge and loop counter-clockwise on a single track following the alignment of the Access Road. Trains stop at stations under each airport terminal where escalators and elevators provide access to the terminal buildings. Trains then complete the loop for the return trip to the CBD.

Space is allocated in the subway tunnel for a future Intra-Airport System (IAS), providing service to the International Terminal which is proposed for relocation about two miles northeast of the existing terminal area. Construction plans also allow for a future transfer station between the two systems. (See Figure III-11.)

2. Double Level Terminal Loop Subway

Scheme 2

This alternative has the same alignment as Scheme 1, but provides a double level subway to accommodate a future People Distribution System (PDS) to serve the terminal concourses. Through the terminal area at O'Hare, the lower subway level carries CTA trains and provides space for the IAS, with the upper level reserved for the PDS. (See Figure III-12.)

3. Stub End Station

Scheme 3

This alternative calls for trains to approach the airport in the Access Road median. Upon reaching the terminal area, the tracks enter a subway tunnel, cross under the outbound access road roadway and proceed straight to a stub end terminal station located beneath the airport parking garage.

The terminal station is bi-level with escalators and elevators providing access from the station platform level to the mezzanine level, which contains the fare collection facilities. On the mezzanine level, passengers proceed to the desired terminal building via existing subterranean passageways, escalators and elevators with additional moving walkways provided.

The subway tunnel and station are located slightly off-center beneath the garage to avoid disruption to the parking structure's caissons to the greatest extent possible. (See Figure III-13.)

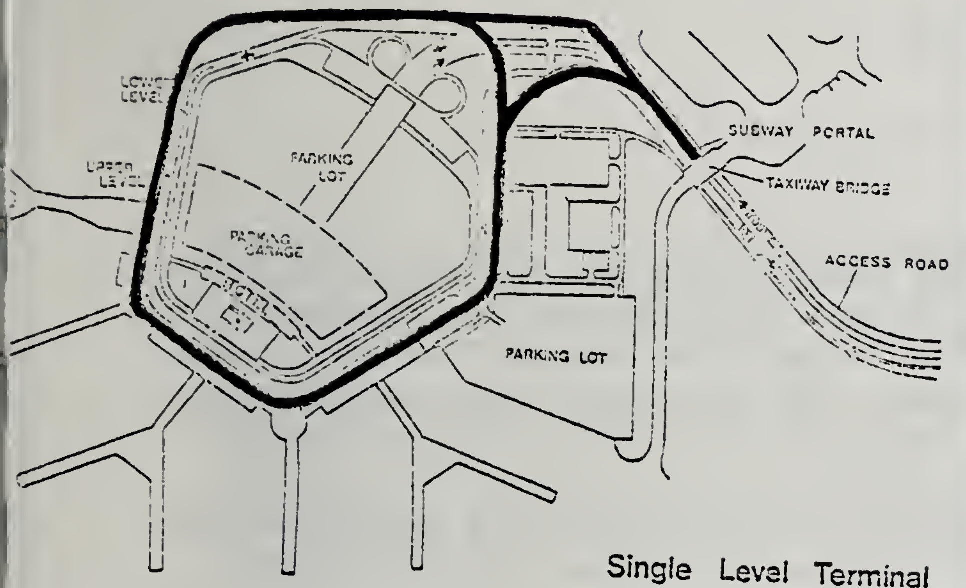
4. Single Track Elevated Loop

Scheme 4

As in Schemes 1 through 3, trains approach the airport via the O'Hare Access Road and enter a subway at the taxiway bridge. The tracks, however, would

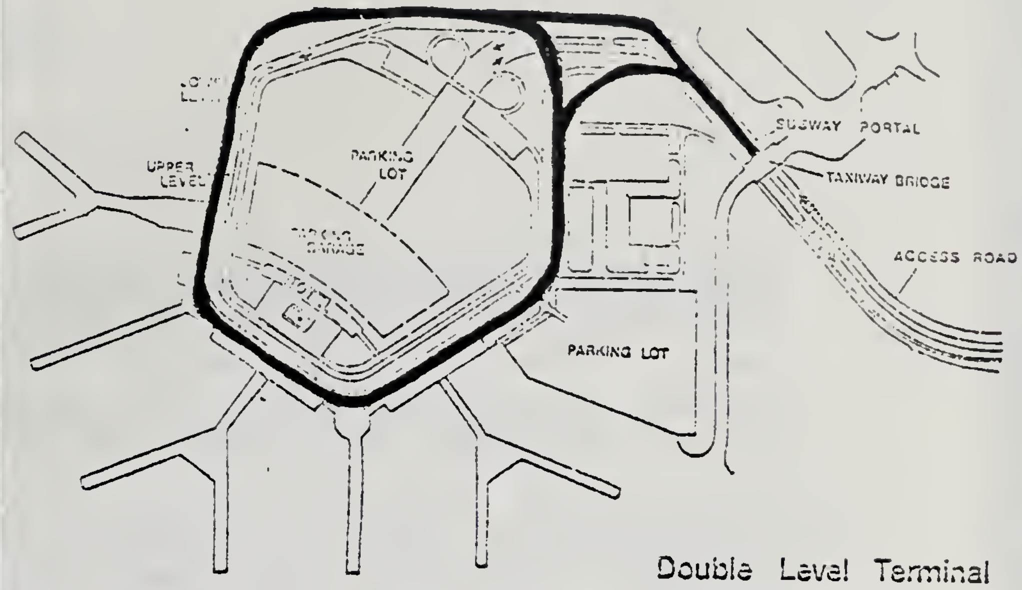
O'HARE STATION DESIGN ALTERNATIVES

Figure III-11



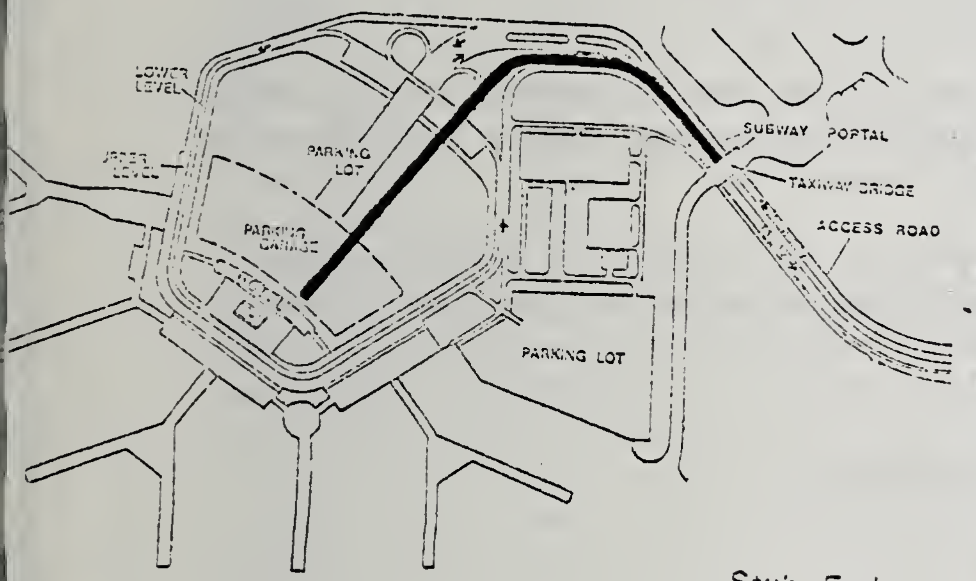
Single Level Terminal Loop Subway

Figure III-12



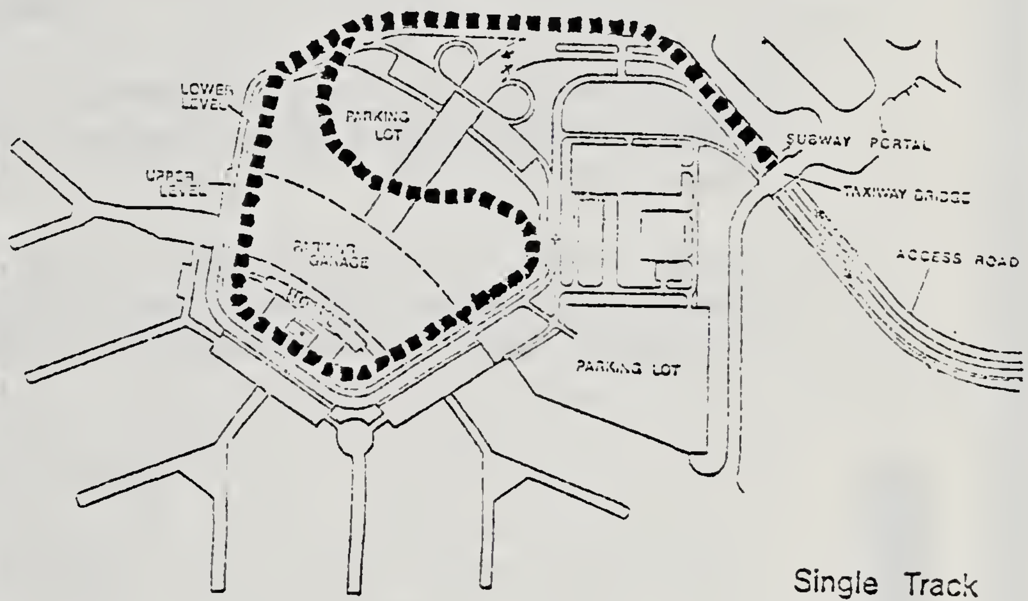
Double Level Terminal Loop Subway

Figure III-13



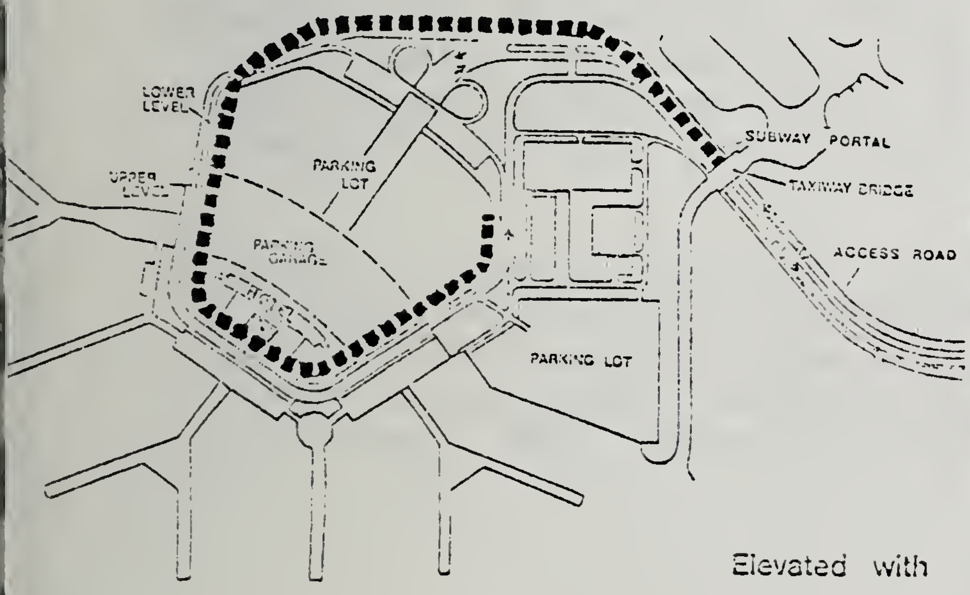
Stub End

Figure III-14



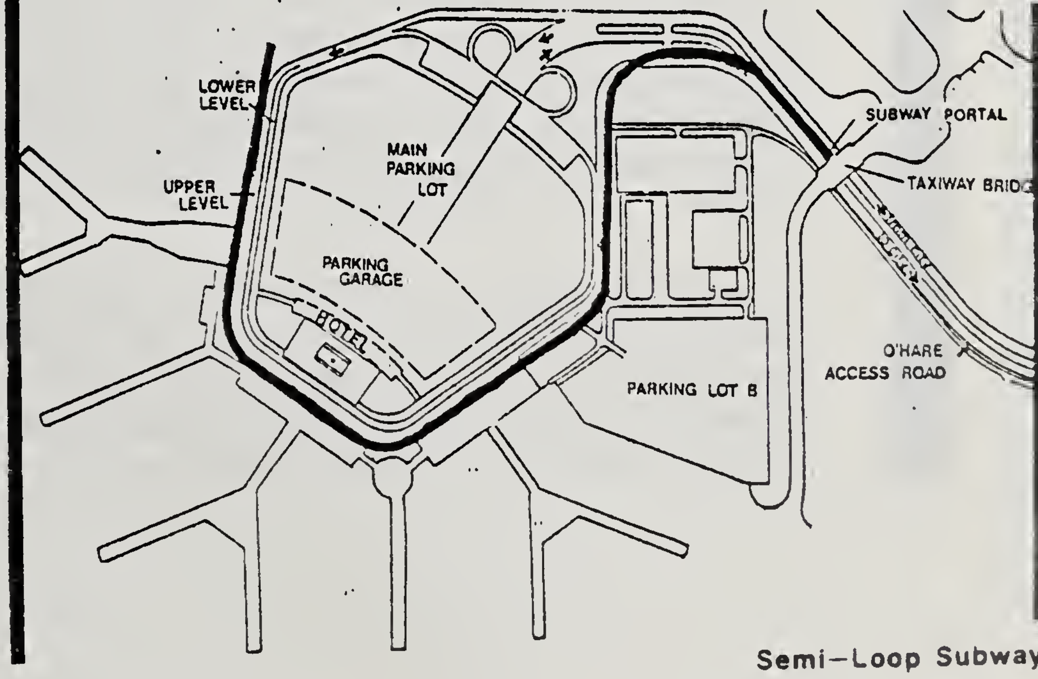
Single Track Elevated Loop

Figure III-15



Elevated with Double Track

Figure III·16



Semi–Loop Subway

then cross under the inbound lanes of the Access Road and incline to a 21 foot elevation, running between the terminal access roadways and the parking structure. Trains circulate counter-clockwise through the terminal area, stopping at each terminal building. The tracks then run across the open parking area behind the garage to complete the loop and make the return trip to the CBD.

Transit patrons exit the stations via elevators and escalators which provide access to the underground pedestrian walkways and the lower level of the terminal buildings. (See Figure III-14.)

5. Double Track Elevated

Scheme 5

This scheme is similar to Scheme 3, except that tracks terminate in a stub beyond Terminal 3 to allow trains to change tracks and double back for the return trip to CBD.

Again, stations are provided at each terminal building and elevators and escalators access the underground pedestrian walkways to the lower level of the terminals. (See Figure III-15.)

6. Semi-Loop Subway

Scheme 6

As in Schemes 1 through 5, Scheme 6 calls for trains to approach the airport via the O'Hare Access Road median and enter a subway at the taxiway bridge. Trains will make a partial loop clockwise in a double track tunnel, located partially under the terminal buildings baggage claim area and partially under the grassed area in front of the terminals. The route ends at stub trail tracks beyond the International Terminal. Trains dead end at the stub trail tracks and proceed in the opposite direction through the airport for the return trip to the CBD.

Three stations are included at the airport, one at each terminal building. Station entrance is made via the existing pedestrian tunnel lobbies to a mezzanine. From the mezzanine, stairs, escalators and an elevator provide access from the mezzanine to each station platform. Trains stop at each station both on the way from and on the way to the CBD. (See Figure III-16.)

7. Analysis

a. Construction Disruption

The subway loop and elevated schemes would cause the greatest total disruption to traffic movements, while the subway loop schemes would have more of an effect on utilities and airport services.

The lower level roadway in the terminal areas would be affected by all of the schemes except the stub end subway. Placement of support structures for the elevated alignments would be disruptive to traffic movements, and the presence of the structures after construction would continue to have an adverse effect on traffic flow. The three subway loop alternatives would cause severe disruption during construction. The stub end alternative would cause minor disruption on the departure roadway while excavation occurs.

The greatest adverse impact on parking structures would occur with the elevated loop and the stub end subway, both of which affect the main lot behind the garage. The elevated plan would permanently remove a number of parking spaces and would also foreclose the option of future expansion of the garage. The stub end design would temporarily remove 530 parking spaces, while excavation is underway. These spaces would become available again upon completion of construction. Subway loop schemes have no affect on airport parking during construction.

Utilities, Federal Aviation Administration and U.S. Customs Office operations, and baggage claim facilities would be most affected by the looping subway schemes due to the extent of excavation required. Utilities and FAA communications systems would have to be relocated and half of the baggage claim facilities at each terminal would be closed during station construction. The impact of the single level subway would be somewhat less due to its shallower tunnel and shorter construction time. Elevated schemes would create some localized disruption to airport structures while support caissons were placed. The stub end subway would not affect any of these structures.

TABLE III-4

AIRPORT STATION
DESIGN ALTERNATIVES COMPARISON

	SINGLE SUBWAY	DOUBLE SUBWAY	STUB END	ELEVATED LOOP	ELEVATED STUB END	SEMI-LOOP SUBWAY
1. CONSTRUCTION DISRUPTION						
A. Traffic	2	3	1	5	6	3
B. Parking	1	1	5	6	4	1
C. Airport Structure	4	5	1	2	2	5
D. Airport Services	4	5	1	2	2	5
2. PATRON CONVENIENCE AND COMFORT						
A. Terminal Accessibility*	1 (3.6)	1 (3.9)	4 (5.4)	5 (5.9)	5 (5.9)	3 (4.6)
B. Exposure to Weather	1	1	1	5	5	1
C. Noise	4	2	1	5	6	3
3. CAPITAL COST**	4 (56.4)	5 (68.2)	2 (31.2)	1 (26.8)	3 (36.8)	6 (72.5)
4. STATION OPERATIONS	3	3	1	6	5	2
	24	26	17	37	38	29

*Accessibility time in minutes from Taxiway Bridge to Baggage Claim Area in Terminal 2.

**Costs are in millions of dollars at 1978 prices. Included in all construction beginning at the subway portal, west of the taxiway bridge.

b. Patron Convenience and Comfort

The looping and semi-loop subways would each provide stations beneath the individual terminal buildings, resulting in the greatest convenience to transit users. The elevated schemes would also have stations at each terminal, however, users would have to make several level changes to reach the terminals, going from platform level to the underground walkways and then up to the terminals.

The stub end subway would be less convenient than subway alternatives because transit patrons would have to walk from the station beneath the garage, using the existing walkways under the terminal roadways. The international terminal would be the least easily reached of the three terminals, with the domestic terminals having roughly equivalent access.

Transit users would be exposed to greater noise levels and to inclement weather with either of the elevated alignments. The looping subways would be less noisy than the elevated schemes but noisier than the stub end due to track curvature.

c. Costs

In 1978 prices, the least costly of the terminal design schemes is the elevated loop, followed by the stub end subway, and the elevated stub end. The two full loop subways are significantly more expensive, as would be expected, due to the extent of excavation required. The semi-loop subway scheme is most expensive of all.

d. Station Operations

With respect to the movement and staging of trains at the O'Hare station, the stub end subway alternative would provide the greatest flexibility and ease of operations. The two platform, three track configuration would make train movements adaptable to unexpected delays or equipment malfunction. The two elevated schemes would be most susceptible to delays and more difficult to service than the other subway plans.

Passenger flow would also be simplest with the single station design, as would fare collection and maintenance. The semi-loop subway scheme would require the construction of a mezzanine over each station platform for fare collections as the platforms would be too narrow for such facilities.

e. Conclusion

Neither of the elevated schemes would provide adequate service at O'Hare, when compared with the subway alternatives. Among the subway alternatives, the stub end station configuration ranks most favorably, except in relative convenience to transit users.

Passenger convenience with the stub end design is somewhat reduced over the other schemes because transit patrons would have to travel approximately 700 feet between the station and the domestic terminals. The actual time difference amounts to less than 5 minutes, however, and additional moving sidewalks will be provided to make travelling this distance easier. Transit users under the stub end design would have the same access to terminal buildings as do users of the garage, and the current high level of use of the parking structure indicates that this distance is not unacceptable to airport users. Additional amenities could be provided by the airlines should the stub end alternative be constructed. These could include station mezzanine level baggage checking and ticketing at O'Hare.

With respect to construction disruption, the stub end alternative is, by far, the most desirable because it would not interrupt the terminal roadways traffic. Interfering with the already complex and busy operations on the lower level roadway could result in unacceptable delays for passengers and others who drive to the airport. This scheme has the further advantage of not disrupting baggage claim facilities. The combined effects of roadway and terminal disruption, which would be present with the other subway schemes, could have unquantifiable negative secondary impacts on either individual airlines or the airport as a whole. It is not unlikely that airline patrons would make travel choices aimed at avoiding the construction disruption at O'Hare, which could financially impact airlines and/or the airport.

The stub end alternative is economically and operationally superior to the other subway design schemes. It would cost less to build and maintain than other subway station plans, and the three-track, two-platform configuration would provide for better layover and staging of trains.

E. INTERMEDIATE STATION DESIGN ALTERNATIVES

Early in the planning process for the O'Hare Extension, an analysis was conducted to determine the elements to be included in station design for those alternatives which included intermediate stations. Since certain elements are intrinsic to the design of a transit station (i.e. platform, station house and bus depot), and other elements are either mandated by regulation or provide a service without significant impact on station design (i.e. elevators for the handicapped and elderly and kiss-n-ride drop-off facilities), the conceptual question became whether or not to include a park-n-ride facility in intermediate station complex design.

Demand analysis for park-n-rides along the Kennedy Expressway has been underway for many years. Ralph H. Burke, Inc. completed a feasibility study for park-and-ride structures on the Kennedy, and their results have been the basis for further planning. Two of the most important results obtained from the Burke study are: 1) the three most desirable sites for park-n-ride structures on the Kennedy Expressway are at DesPlaines River Road, Cumberland Avenue, and Harlem Avenue; and 2) a significant demand exists for such facilities.

The three most desirable park-n-ride sites correspond to the three proposed intermediate station locations; however, the total demand exceeds the number of spaces that can be feasibly provided. At all three sites, limitations exists which reduce the number of feasible park-n-ride design alternatives to one basic maximum capacity and design at each site. Among these limiting factors are: the inability of the local street network to handle larger park-n-ride vehicle volumes, availability of right-of-way, capital cost, and aesthetic considerations. Not all factors operate in each case, but in each case, factors exist which limit the number of parking spaces that can be realistically accommodated. Listed below are the descriptions of both the no-build and feasible build alternatives for each park-n-ride garage site.

1. Harlem Avenue No Park-n-Ride

Scheme H-1

The no park-n-ride option for the Harlem Avenue station complex would include a kiss-n-ride drop off facility and all public transportation facilities including station, platform, and bus terminal, as well as an elevator from the station house level of the platform level. Roadway reconstruction at the Harlem Avenue station site would be necessary to support station oriented transportation activities. One ramp removal, one ramp reconstruction and modification to Higgins Avenue would be required to accommodate roadways used for bus access to the station house. Construction of a bus bridge over the expressway and a modification to Harlem Avenue would be required to allow the necessary bus movements to and from the station. The kiss-n-ride would be located at the corner of Harlem and Higgins Avenues, with access provided off Higgins Avenue adjacent to one of the bus access roadways.

2. Harlem Avenue Park-n-Ride

Scheme H-2

The park-n-ride alternative for the Harlem Avenue station complex would include the public transportation elements of Scheme H-1, the kiss-n-ride facility, elevator, and all roadway reconstruction required for the no-build option. In addition, the park-n-ride alternative would include a three level, 685 space parking structure with top level at grade, an addition to the bus bridge over the expressway and reconstruction of the ramp to the westbound expressway lanes. The latter two elements would allow direct egress from the parking structure to the westbound Kennedy Expressway.

3. Cumberland Avenue No Park-n-Ride

Scheme C-1

The Cumberland Avenue no park-n-ride alternative would incorporate the same design features listed for the Harlem Avenue no park-n-ride scheme. The Cumberland Avenue scheme would require, in addition, a pedestrian bridge spanning the expressway to allow pedestrian access to the station. Also, as was the case of Harlem Avenue, substantial roadway reconstruction would be required, consisting of the elimination of one ramp in the southwest quadrant of the Kennedy-Cumberland interchange to provide room for the bus terminal and kiss-n-ride, and the reconstruction of two other ramps to both accommodate the traffic movements formerly handled by the eliminated ramp and to allow the construction of a required signalized intersection at the bus depot/kiss-n-ride entrance.

Additional roadway changes would be required on Cumberland Avenue, including the reconstruction of the Cumberland Avenue-Bryn Mawr Avenue intersection.

4. Cumberland Avenue Park-n-Ride

Scheme C-2

The station design alternative calling for a park-n-ride facility at Cumberland Avenue would incorporate all the facilities and require all of the roadway and ramp reconstruction of Scheme C-1. Additionally, Scheme C-2 would include an 850-car capacity park-n-ride facility in the station design within the southwest quadrant of the Kennedy Expressway-Cumberland Avenue interchange. In order to accommodate the park-n-ride into the southwest quadrant, the remaining ramp in that quadrant must be moved approximately 36 feet to the southwest adjacent to the expressway right-of-way line.

5. Rosemont Station No Park-n-Ride

Scheme R-1

The Rosemont station no park-n-ride station design again would incorporate the same design features listed for Scheme H-1. Since the Kennedy Expressway is above grade level at the Rosemont site, a pedestrian tunnel under the westbound expressway roadway would also be required to allow access from the bus terminal and kiss-n-ride, located in the northeast quadrant of the Kennedy Expressway-Des Plaines River Road interchange, to the station platform, located in the expressway median. Inclusion of the bus depot and kiss-n-ride in the northeast quadrant of the interchange would necessitate the removal of both expressway ramps in that quadrant. The ramps in the northwest quadrant would be reconstructed to handle traffic movements from the eliminated ramps and would intersect Des Plaines River Road at a new signalized intersection. The entrance and exit roadways for the bus depot and kiss-n-ride would form the fourth leg of the above intersection. Some roadway reconstruction would also be required on Des Plaines River Road.

6. Rosemont Station Park-n-Ride

Scheme R-2

The addition of a 800 car capacity park-n-ride facility at the Rosemont station site would require only the construction of an open parking lot in that part of Kennedy Expressway-Des Plaines River Road intersection's northeast quadrant not occupied by the bus terminal and kiss-n-ride. Nor further roadway or ramp reconstruction would be required in addition to that required for Scheme R-1. Scheme R-2 would incorporate all the station design features incorporated into Scheme R-1.

The no park-n-ride and park-n-ride alternatives for each station site are compared in Table III-5. A list of criteria pertinent to park-n-ride analysis is used to differentiate among alternatives. Again, the forced choice ranking method is used to rank the alternative, with 1 assigned to better performance under each criteria and 2 assigned to worse performance. Park-n-Ride scheme abbreviations are listed again for reference.

TABLE III-5

Intermediate Station Design Alternatives Comparison

Scheme H-1 - Harlem Avenue No Park-n-Ride
Scheme H-2 - Harlem Avenue Park-n-Ride
Scheme C-1 - Cumberland Avenue No Park-n-Ride
Scheme C-2 - Cumberland Avenue Park-n-Ride
Scheme R-1 - Rosemont No Park-n-Ride
Scheme R-2 - Rosemont Park-n-Ride

	Scheme H-1	Scheme H-2	Scheme C-1	Scheme C-2	Scheme R-1	Scheme R-2
1. Construction Disruption	1	2	1	2	1	2
2. Transit Service						
Travel timesaving (passenger hours per year)*	(0) 2	(14,000) 1	(0) 2	(26,000) 1	(0) 2	(43,000) 1
Patronage (pass. per day)	(8,900) 2	(9,800) 1	(4,500) 2	(5,700) 1	(4,300) 2	(5,700) 1
User group served	(5) 2	(6) 1	(5) 2	(6) 1	(5) 2	(6) 1
Transit system accessibility	2	1	2	1	2	1
3. Vehicular Traffic						
Local Traffic	1	2	1	2	1	2
Neighborhood Parking	2	1	2	1	1	1
Park-n-ride demand	2	1	2	1	2	1
Regional Traffic relief	2	1	2	1	2	1

*The travel time savings for the no park-n-ride schemes were used as baseline figures.

(Table III-5 Cont.)

	Scheme H-1	Scheme H-2	Scheme C-1	Scheme C-2	Scheme R-1	Scheme R-2
4. Air Quality						
Local air quality (PPM-1981)	(8.1) 1	(12.1) 2	(5.6) 1	(7.8) 2	(5.3) 1	(5.8) 2
Regional air quality control	2	1	2	1	2	1
5. Noise Level	1	2	1	2	1	1
6. Energy Conservation** (BTU/year)	(0) 2	(8.3×10^9) 1	(0) 2	(1.1×10^{10}) 1	(0) 2	(1.2×10^{10}) 1
7. Station Costs						
Capital (Millions)	($7.3) 1	($11.3) 2	($8.1) 1	(10.6) 2	($1.7) 1	($3.7) 2
Operating maintenance deficit	2	2	2	2	2	2
8. Aesthetics	1	2	1	2	1	2
TOTALS:	26	23	26	23	25	22

**Energy conservation figures for the no park-n-ride schemes are used as baseline figures.

7. Analysis

a. Construction

Construction of station complexes at all three intermediate locations with no adjoining park-n-ride facilities will require less construction activity, a shorter construction period, and hence, less total disruption.

At Harlem Avenue, the no-build option would not require excavating the embankment adjacent to the eastbound expressway lanes, constructing the park-n-ride facility, reconstructing the entrance ramp to the westbound expressway lanes, or constructing a wider bus bridge over the expressway. This option would, however, cause disruption during construction of the public transportation facilities and the necessary roadway reconstruction.

Additional disruption associated with the build option will result from the construction of the parking structure, a wider bus bridge, and the reconstruction of the ramp to the westbound expressway lanes.

In addition to disruptive construction activities similar to those of option H-1, the no-build option at Cumberland Avenue would include the construction of a pedestrian bridge, the elimination of a ramp in the southwest quadrant of the interchange, the reconstruction of the Cumberland Avenue-Bryn Mawr Avenue intersection, and the reconstruction of ramps in the southwest quadrant of the interchange.

Option C-2 would cause additional disruption at the Cumberland Avenue station complex as a result of the construction of the park-n-ride facility and the moving of the remaining ramp in the southwest quadrant approximately 36 feet to the southwest.

At the Rosemont station, disruption from the no-build option (R-1) would result from the construction of public transportation facilities, the removal of both ramps in the northeast quadrant of the interchange, ramp reconstruction, and the construction of a pedestrian tunnel. Minimal additional disruption would result from the construction of the grade level park-n-ride facility at that location.

b. Transit Service

In all transit service categories, the build option at each of the three intermediate station complexes will provide better service than the no-build options. By transfering from auto to rapid transit, CBD oriented park-n-ride users would enjoy savings in travel time.

At all three stations, patronage would be greater with the build alternatives than with the no-build alternatives. All six potential user groups would be serviced with the inclusion of park-n-ride facilities. With the no-build alternatives, only five user groups would be served at the intermediate stations; thus eliminating the option of expressway drivers to transfer to the rapid transit system for CBD access.

By providing park-n-ride facilities at all three stations, accessibility to the transit system would be provided to the maximal number of people within the region.

c. Vehicular Traffic

Use of the park-n-ride facilities at the three intermediate station locations would increase traffic volumes on arterial streets in the project area. These increases would be limited to the morning and evening rush hours and would be within the capacity of area intersections. The increased volumes would, however, represent a greater amount of traffic than would exist with the no-build alternative.

Although traffic volumes would be lower with the no-build options, pressure for parking spaces in the areas surrounding the Harlem and Cumberland Avenue stations would be greater. The proximity and current availability of parking on residential streets near the Harlem Avenue station would make driving to the station in the absence of a parking facility an attractive option. At Cumberland Avenue, a minimum number of on-street parking spaces currently exist. On-street parking spaces are virtually non-existant within walking distrance of the Rosemont station.

The inclusion of park-n-ride facilities will go farther toward satisfying the demand for such facilities that exists at each intermediate station site. Although park-n-ride capacity constraints will not permit satisfaction of the full park-n-ride demand, the absence of such facilities would obviously satisfy none of this demand.

The park-n-ride alternatives at the three stations would remove vehicles from the expressway during both the a.m. and p.m. peak periods. As park-n-ride users change modes from auto to transit, auto trips on the expressway would be reduced. Such a traffic reduction on a roadway of regional importance adds to the overall effectiveness of the regional transportation network.

d. Air Quality

As was the case with traffic considerations, air quality effects would occur on both the local and regional levels. Locally, air quality impacts would be greater with the three park-n-ride alternatives. The local traffic increases associated with garage use at all three station locations would correspondingly increase the emission of automobile exhaust pollutants. Regionally, the short-cutting of Kennedy Expressway auto trips resulting from park-n-ride use would reduce the impact of the Kennedy Expressway as a pollution source and would have beneficial impacts on air quality along the Kennedy Corridor and the Central Area.

e. Noise Levels

Because of the close proximity of residential and commercial structures to the proposed park-n-ride facility at the Harlem Avenue station, impacts of increased noise levels will be felt. The increase in noise levels near the station would relate directly to the amount of vehicular traffic near the station area. Accordingly, the lower amount of vehicular traffic generated by the no-build alternative would result in a lesser noise impact.

Although similar noise level increases are anticipated for the vicinity around the Cumberland Avenue Park-n-Ride, adverse impacts will be reduced as a result of the distance of surrounding receptor sites (office buildings, commercial uses, residential uses, etc.) from the station complex.

At the Rosemont station, both the build and no-build alternatives received equal rankings in regards to noise levels. Any noise emissions that might have been associated with the operation of a park-n-ride facility at that location will be dissipated before they can impact any noise sensitive receptors.

f. Energy Conservation

The construction of the three intermediate station complexes with park-n-ride facilities would result in a significant conservation of energy by allowing the mode change from auto to rapid transit. Electricity, the type of energy used by the rapid transit system, is in more abundant supply than the scarcer petroleum based fuels. By transfering from private vehicles to the rapid transit system at the Harlem Avenue, Cumberland Avenue and Rosemont Stations, the extension with adjacent park-n-ride facilities would offer CBD destined expressway drivers easy and convenient means for changing to transportation modes not dependent on gasoline and diesel fuels.

g. Cost

Capital costs for station construction with the park-n-ride structures are obviously higher than without the facilities. The Harlem Avenue station with the no-build option would cost $7.3 million; and with the park-n-ride facility, $11.3 million. Similarly, the Cumberland Avenue station would cost $8.1 million without the facility and $10.6 million with the facility; and the Rosemont station, $3.7 million with the park-n-ride and $1.7 without.

There tends to be no difference in operating costs because, first, the parking fees charged should cover park-n-ride operating costs, and second, enough reserve capacity would exist on the proposed feeder bus network to absorb the additional bus patronage resulting from the no-build alternative, thereby avoiding further deficits from additional bus operations.

h. Aesthetics

The construction of park-n-ride facilities at station locations will have greater impact on the visual environment at the three intermediate station sites than the no-build alternatives. Although the top level of the Harlem Avenue parking facility will be at grade level, the facility will increase the size of the station complex. Land uses near this location are primarily residential, with several structures located in close proximity to the park-n-ride site.

At Cumberland Avenue, the 850-car park-n-ride facility will be located in the southwest quadrant of the Kennedy Expressway-Cumberland Avenue interchange. Land uses surrounding the proposed station complex are primarily commercial in nature, with many adjacent to large parking lots and garages. Although the no-build alternative would be more aesthetically attractive than the build option, the park-n-ride facility at that location will not produce significant negative visual impacts.

At the Rosemont station, the construction of a grade-level park-n-ride facility will have minimal impact upon the visual environment. Potential adverse aesthetic effects of this facility will not only be mitigated by its location on a large tract of land between the tollway and expressway, but also by the absence of views which would be impacted by a transportation facility.

In all three analyses, the station design alternatives that include park-n-ride facilities have provided a higher level of transportation service than the no-build options. Although some negative effects occur with the park-n-ride alternatives, they are outweighed by their advantages over the no-build options.

IV. DESCRIPTION OF THE RECOMMENDED ALTERNATIVE

A. ROUTE

The recommended alternative involves extending the Milwaukee Line of the CTA rapid transit system from its present terminus, the terminal yard north of the Jefferson Park station, to O'Hare Airport. Tracks are continued in the median of the Kennedy Expressway to the first intermediate station at Harlem Avenue, approximately 2½ miles west of Jefferson Park. From the Harlem Avenue Station, tracks continue westward 1½ miles to the second intermediate station at Cumberland Avenue.

West of the Cumberland Avenue Station at the Kennedy Expressway-Northwest Tollway junction, the transit tracks pass under the eastbound lanes of the tollway and reemerge in the Kennedy Expressway median. The transit tracks then bridge the Des Plaines River and continue to the third intermediate station, the Rosemont Station, at Des Plaines River Road approximately 1 mile west of Cumberland Avenue.

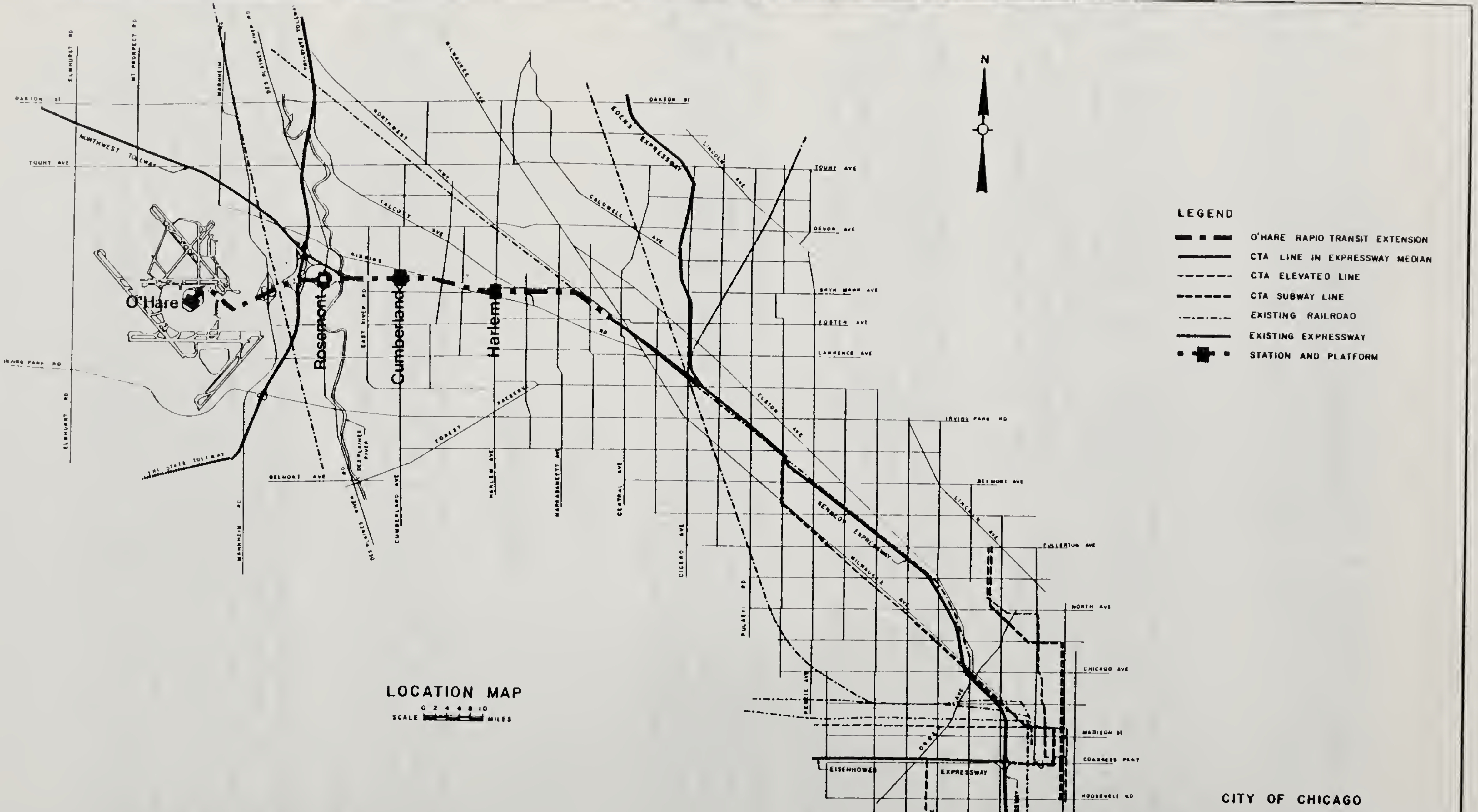
From the Rosemont Station, the transit tracks continue westward in the expressway median until the approach to the terminal area at the airport. The tracks enter a tunnel just west of the taxiway bridge and proceed in tunnel under the parking area, terminating at the O'Hare Station located beneath the parking garage. (See Figures IV-1 and IV-2A through 6.)

B. STATIONS

1. Harlem Avenue

The first intermediate station on the proposed extension is planned at Harlem Avenue, approximately two and one half miles west of the Jefferson Park station. In addition to the station facility itself, the station complex will include park-n-ride and kiss-n-ride facilities, a bus terminal area, and a bridge over the Kennedy Expressway.

At Harlem Avenue, the expressway is depressed, resulting in a bilevel station configuration. The entrance and fare collection facilities will be located on the upper level at the same grade as Harlem Avenue, with escalators, an elevator, and stairs providing vertical access to the platform level in the expressway median. The platform, measuring approximately 16 feet by 520 feet, will lie between the east and westbound tracks of the transit line and will be able to accommodate a ten car train. The station platform and transit tracks will be separated from the expressway by concrete barrier walls.



CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

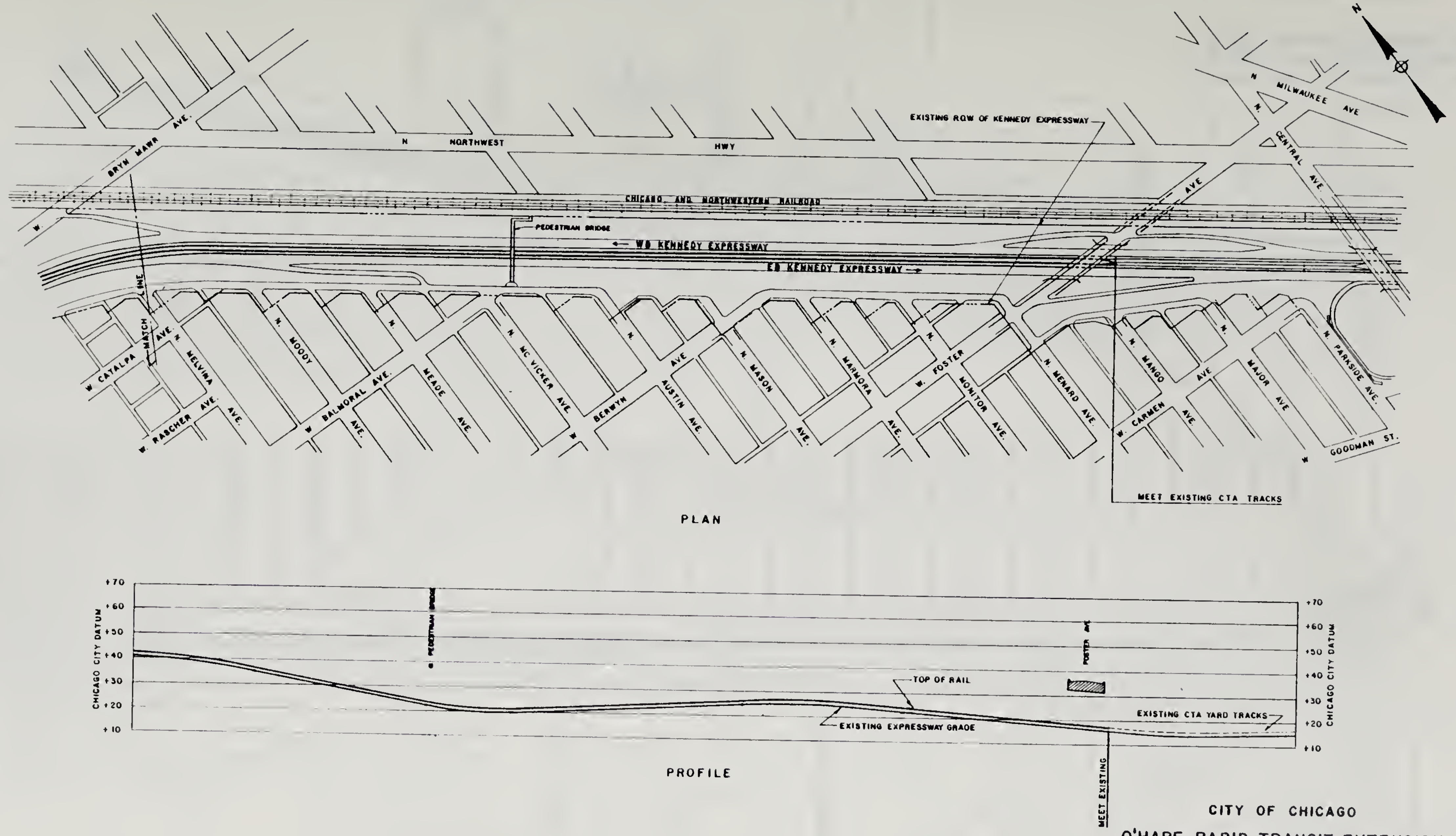
LOCATION MAP

SIGNED Marshall Suloway
COMMISSIONER OF PUBLIC WORKS

JULY 7, 1977

Location Map

Figure IV-1



CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

PLAN AND PROFILE

N. MELVINA AVE. TO W. FOSTER AVE.

JULY 7, 1977

HORIZONTAL SCALE 0 100 200 400 600 FEET
VERTICAL SCALE 0 10 20 40 60 FEET

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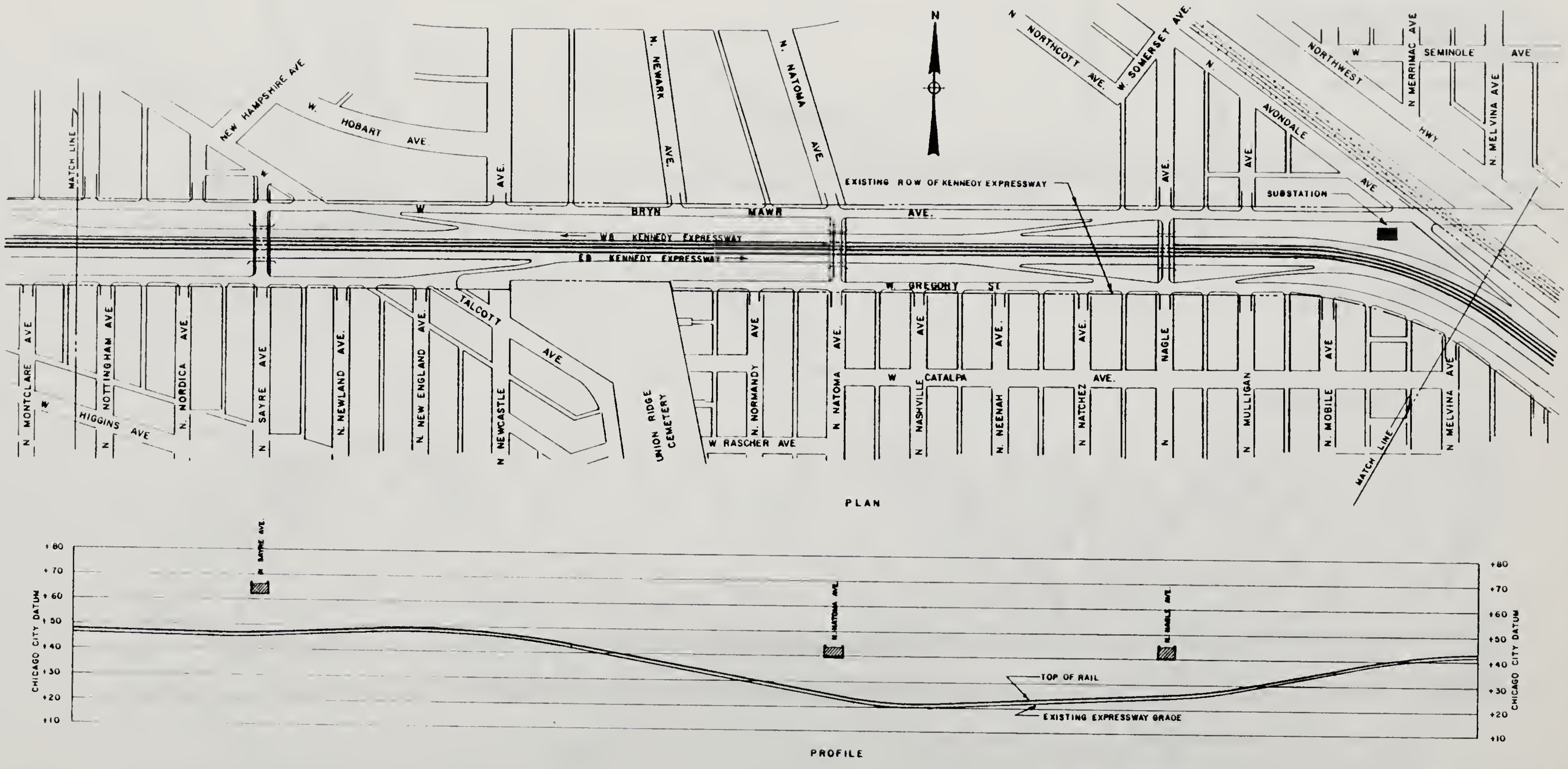
Plan and Profile

FigureIV-2A



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CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

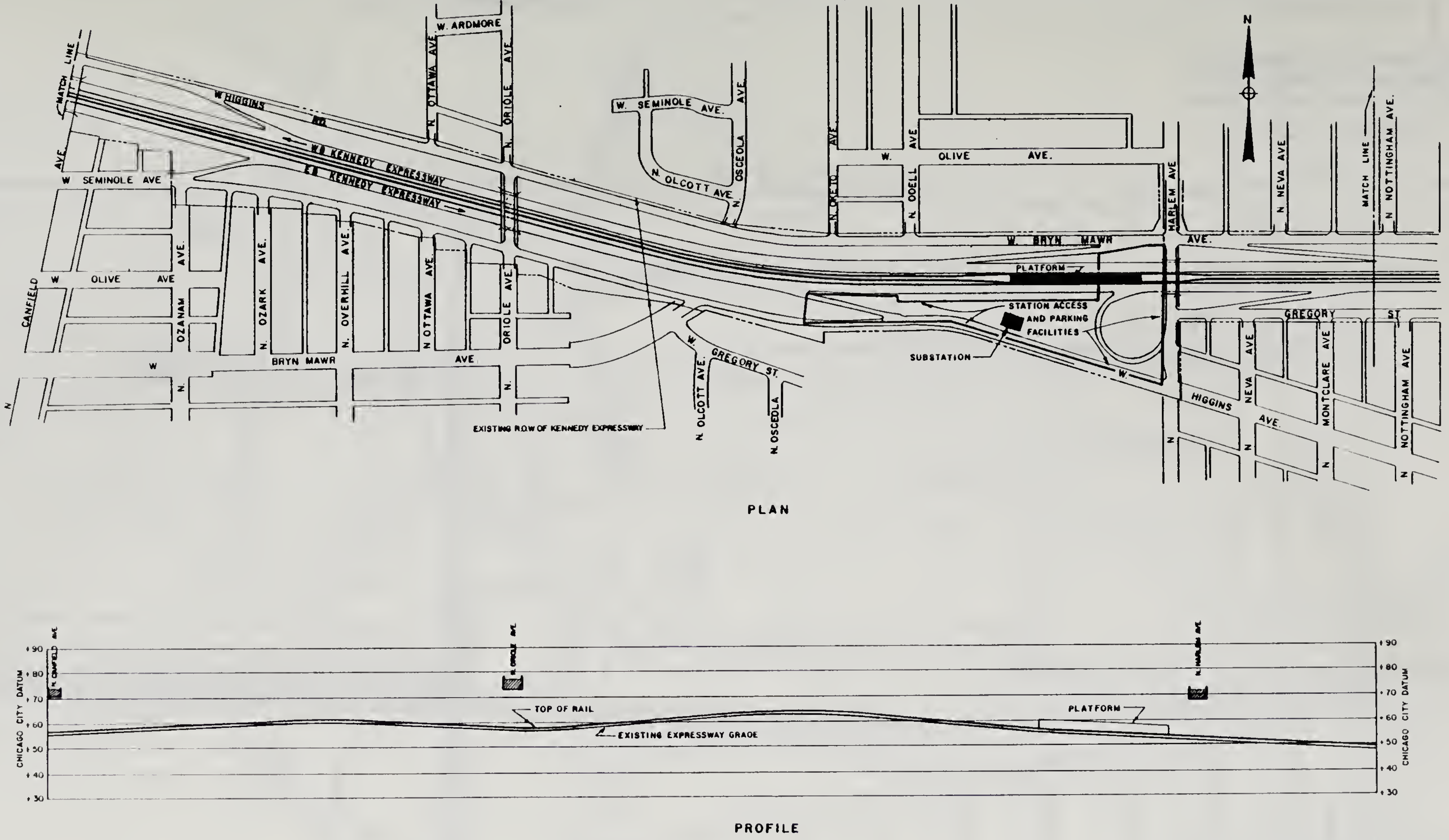
PLAN AND PROFILE

N.NOTTINGHAM AVE. TO N.MELVINA AVE.

JULY 7, 1977

Plan and Profile

Figure IV-2B



HORIZONTAL SCALE 0 100 200 400 800 FEET

VERTICAL SCALE 0 10 20 40 80 FEET

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CITY OF CHICAGO

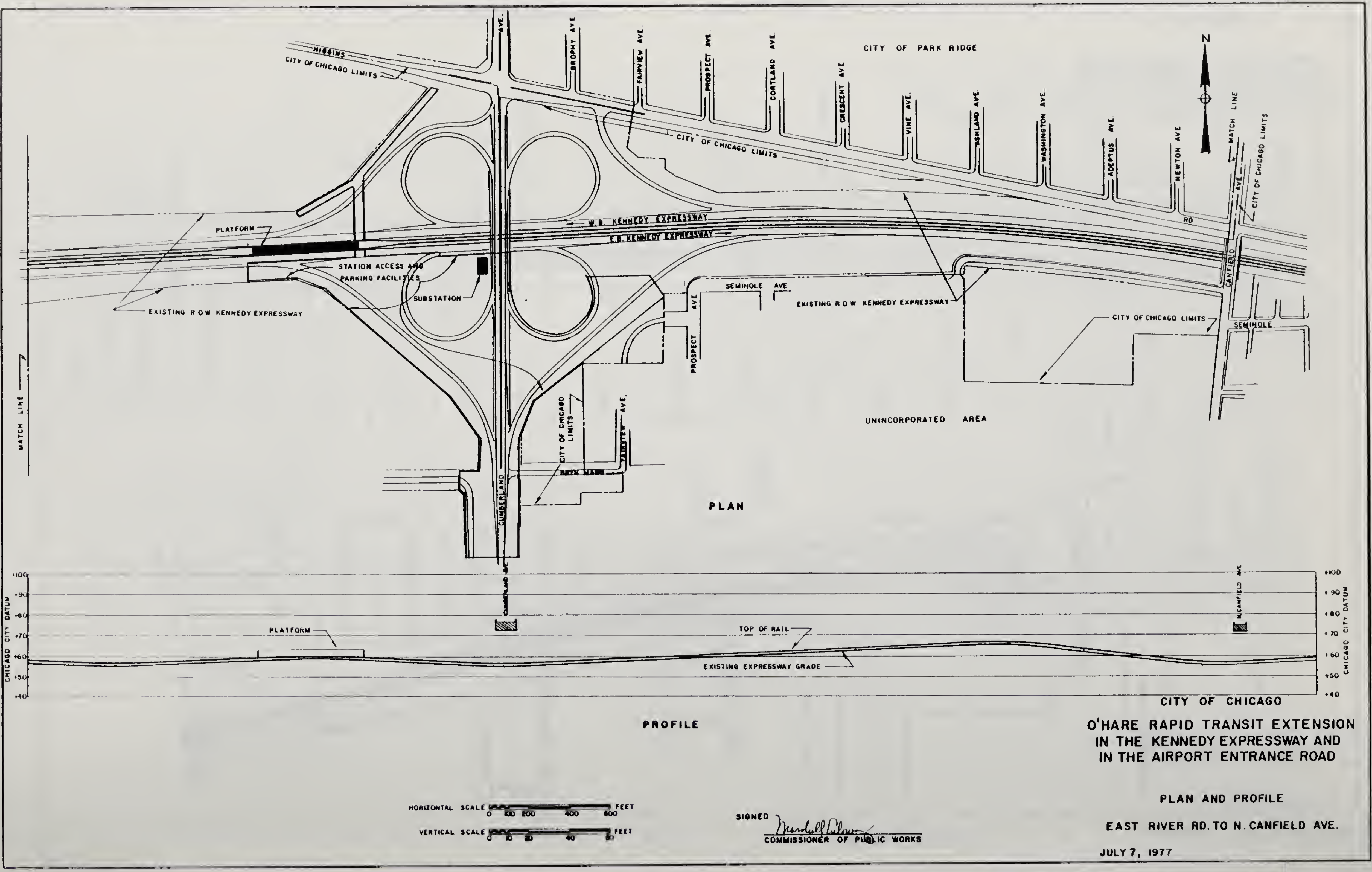
O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

PLAN AND PROFILE

N. CANFIELD AVE. TO N. NOTTINGHAM AVE.

JULY 7, 1977

Plan and Profile **Figure IV-2C**



CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

PLAN AND PROFILE

EAST RIVER RD. TO N. CANFIELD AVE.

JULY 7, 1977

SIGNED Marshall Suloway
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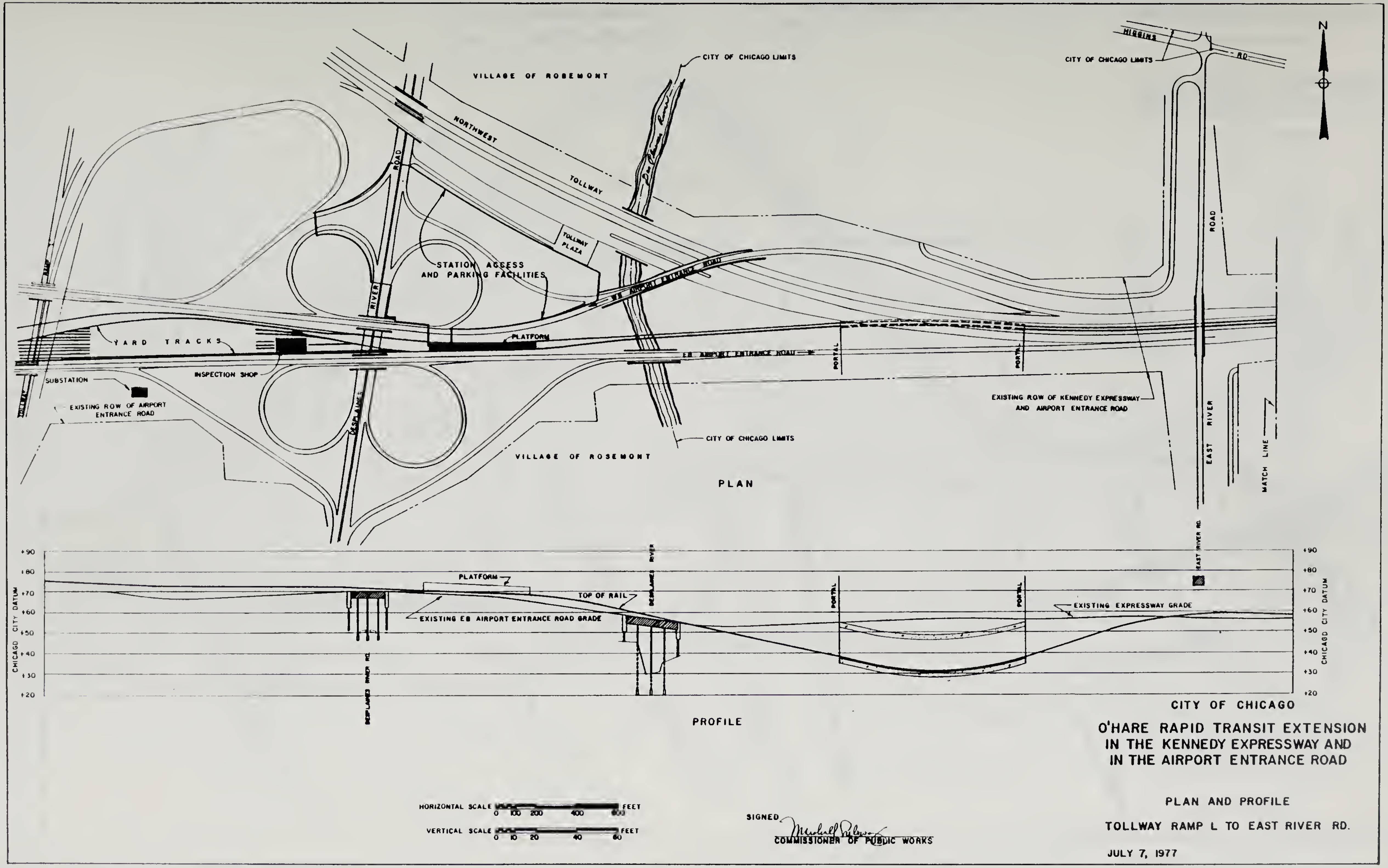
Plan and Profile

FigureIV-2D



CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

PLAN AND PROFILE

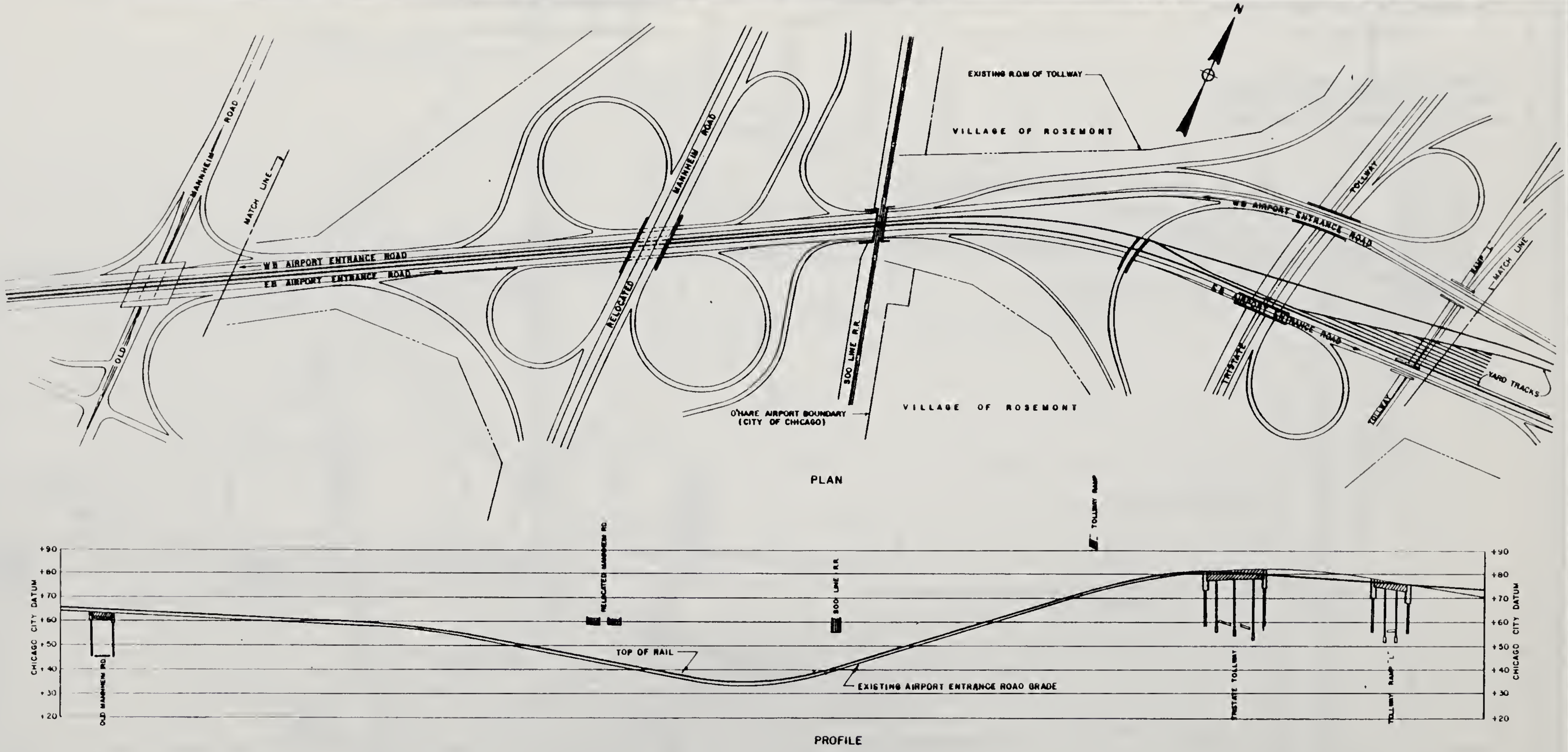
TOLLWAY RAMP L TO EAST RIVER RD.

JULY 7, 1977

SIGNED Michael Pilewski
COMMISSIONER OF PUBLIC WORKS

Plan and Profile

Figure IV-2E



HORIZONTAL SCALE 0 100 200 400 600 FEET

VERTICAL SCALE 0 10 20 40 60 FEET

SIGNED Marshall Suloway
COMMISSIONER OF PUBLIC WORKS

CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

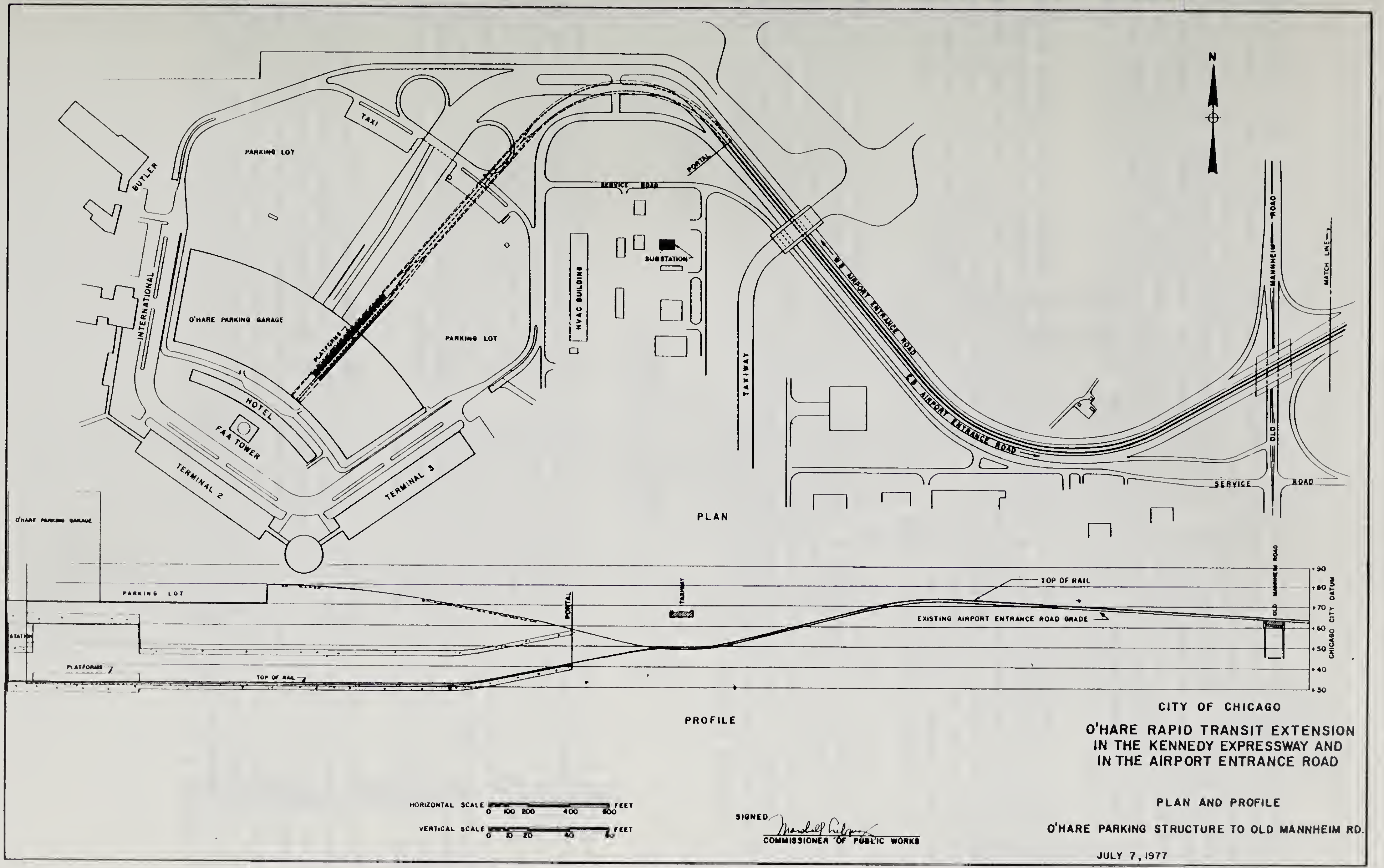
PLAN AND PROFILE

OLD MANNHEIM RD. TO TOLLWAY RAMP L

JULY 7, 1977

Plan and Profile

Figure IV-2F



CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

PLAN AND PROFILE

O'HARE PARKING STRUCTURE TO OLD MANNHEIM RD.

JULY 7, 1977

SIGNED Marshall Suloway
COMMISSIONER OF PUBLIC WORKS

Plan and Profile

Figure IV-2G

A park-n-ride structure is to be located immediately south of the expressway between Harlem Avenue and Higgins Avenue on publicly owned right-of-way. It will be roughly triangular in shape with a capacity of 685 cars on its three levels. The lowest level will be at-grade with the expressway and the top level will be an open deck at the same grade as Harlem Avenue and Higgins Avenue. Plans for the open deck top level include a 44 space kiss-n-ride area in addition to park-n-ride spaces and connection with an access bridge which is to span the expressway. A traction power substation will be located to the west of the park-n-ride structure. (See Figure IV-3.)

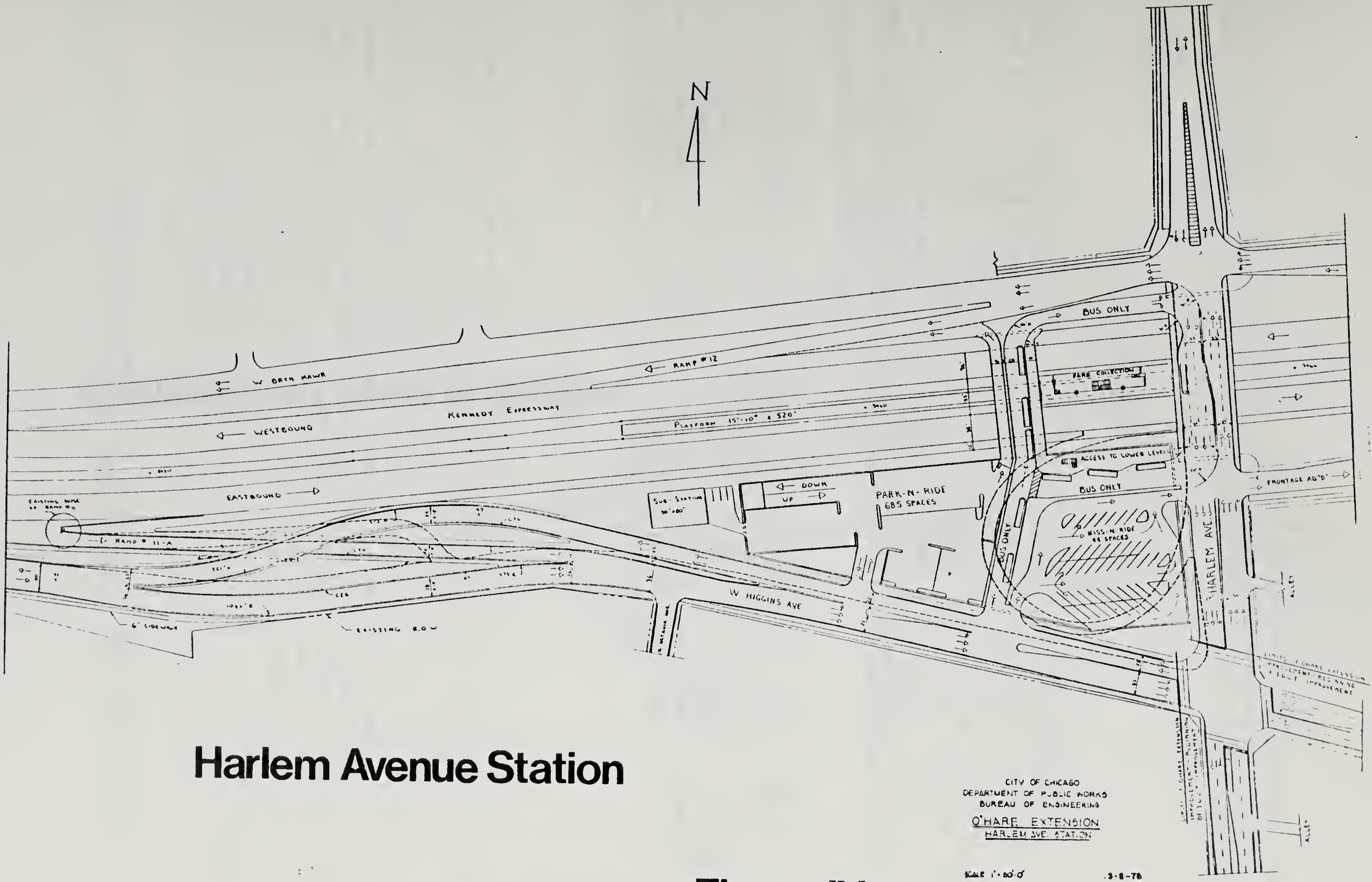
Access to the park-n-ride will occur from Higgins Avenue, with egress either directly onto Higgins Avenue or across the access bridge to the westbound Kennedy Expressway entrance ramp. Kiss-n-ride users are to enter the parking area from Higgins Avenue and exit onto Harlem Avenue. Buses will enter the station area on exclusive bus lanes either from Higgins Avenue or Harlem Avenue, with all buses exiting the station area via the bridge to an exit just south of the Harlem Avenue-Bryn Mawr Avenue intersection.

Modifications will be made to existing expressway ramps on the west side of Harlem Avenue to accommodate the station. The eastbound exit ramp will be grade separated with westbound Higgins Avenue. The ramp presently providing access to the eastbound expressway lanes from southbound Harlem Avenue will be eliminated. The traffic movement accommodated by this ramp will be transferred to an existing entrance ramp off Gregory Street west of Harlem Avenue. Figure IV-3 delineates changes in ramp configuration.

2. Cumberland Avenue

The Cumberland Avenue station is to be located approximately 1½ miles west of Harlem Avenue and has the same type of bilevel station arrangement. The platform level will be fully accessible from the fare collection area via escalators, elevator, or stairs. The platform size is to be approximately 16 feet in width, with a length sufficient to accommodate a 10 car train; and, again, transit and roadway rights-of-way will be separated by concrete barrier walls. The station entrance will be reached via a canopied pedestrian bridge which will span the expressway, providing access from areas on either side of the expressway and from the parking structure and bus terminal.

The park-n-ride at Cumberland Avenue will be a two level, 850 car capacity structure located in the southwest quadrant of the expressway interchange. Also to be included in this complex are a 35 car capacity kiss-n-ride, a bus terminal area, a pedestrian bridge over the expressway, and a traction power substation. The existing southwest quadrant of the cloverleaf interchange at this location will be modified, and exit and entrance ramps will be redesigned to accommodate the transit station complex. The station plan in Figure IV-4 includes a delineation of ramp modifications.



Harlem Avenue Station

Figure IV-3

Cumberland Avenue Station

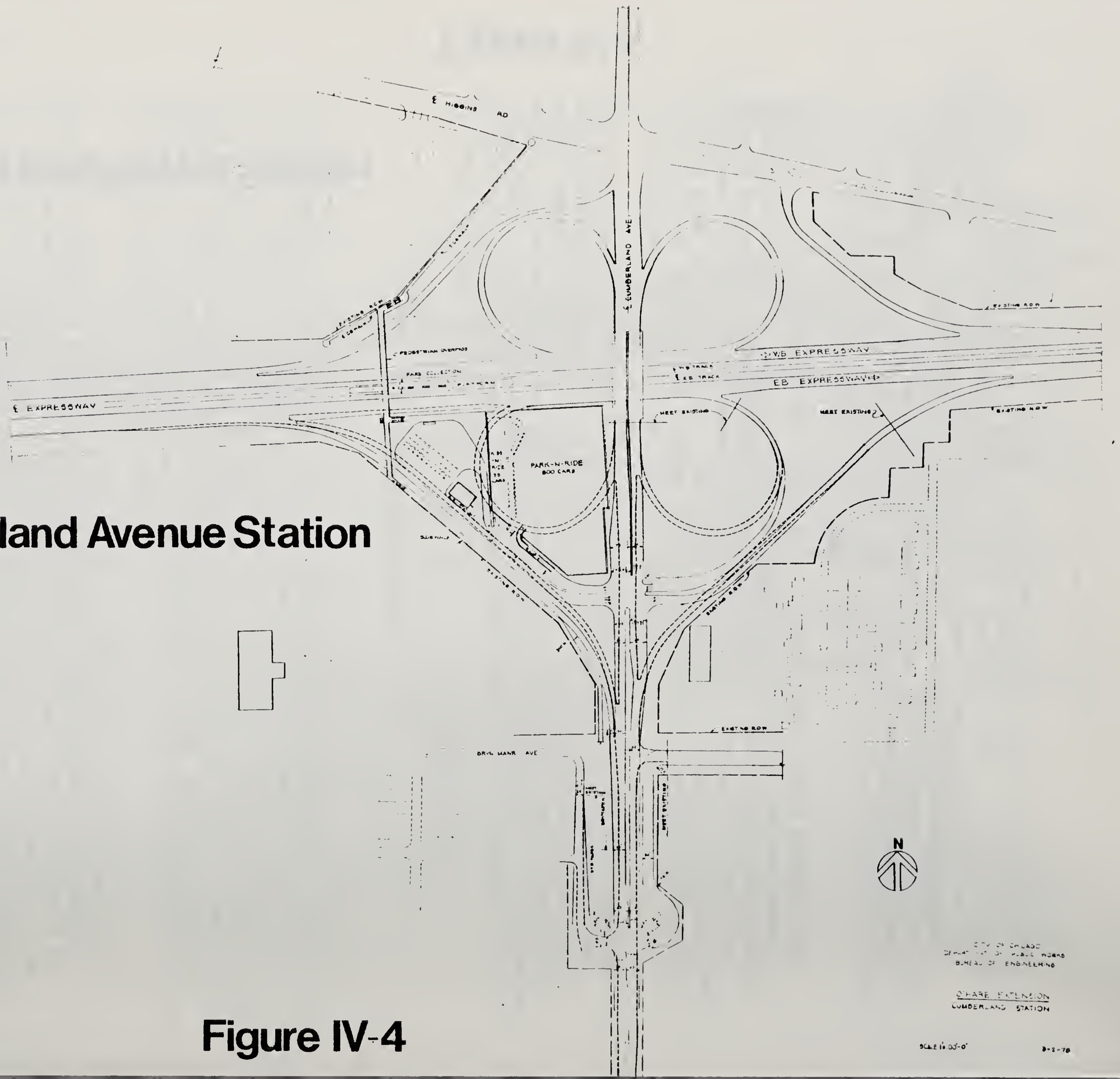


Figure IV-4

Access to the park-n-ride, kiss-n-ride, and bus terminal will be provided from the eastbound lanes of the expressway or from Cumberland Avenue, with egress to Cumberland Avenue. Both directional ramps of the expressway are accessible from Cumberland Avenue.

3. Rosemont

At the Rosemont station location, the expressway and transit tracks are elevated to cross over Des Plaines River Road and the Tri-State Tollway. As with the other intermediate stations, the Rosemont station platform will be located in the roadway median. The fare collection area will be at ground level. Access to the platform is to be provided via a pedestrian tunnel under the westbound roadway and then up to the platform on escalators, elevator, and stairs. The platform itself is planned to be wider at the western end to accommodate the escalators, elevator, and stairs and will taper to about 16 feet at its eastern end. The length of the platform will be 520 feet which is sufficient to accommodate a 10 car train.

The park-n-ride, kiss-n-ride, and bus terminal at Rosemont are to be located north of the expressway adjacent to Des Plaines River Road, and will be on an at-grade lot. Planned parking capacity is 800 cars, with 60 kiss-n-ride spaces. Access to parking will occur directly from Des Plaines River Road and from the westbound lanes of the expressway. Egress is accomplished using Des Plaines River Road or the ramp to the westbound expressway lanes. Figure IV-5 shows the station plan and the modifications to expressway ramps required to accommodate the bus terminal, park-n-ride, and kiss-n-ride.

4. O'Hare

The O'Hare Terminal Station will be located beneath the parking garage at O'Hare Airport. Two 14 by 520 foot island platforms at this station will serve three transit tracks. From the platform, transit patrons will move to the mezzanine level of the station via escalators, stairs, or an elevator. The station mezzanine, containing fare collection facilities, will be located in the basement level of the O'Hare parking garage. From the mezzanine, transit patrons will move through a pedestrian concourse at the garage basement level to existing pedestrian tunnels. The pedestrian tunnels currently provide access to each of the three airport terminals. The pedestrian concourse will be provided with moving sidewalks for patron convenience. The pedestrian tunnels to Terminal 2 are also provided with existing moving walkways. Neither pedestrian tunnel providing access from the garage basement level to Terminal 1 or Terminal 3 will be provided with moving walkways, as they are relatively short. Figures IV-6, IV-7, and IV-8 depict the O'Hare Terminal Station plan and profile.

Space has been allocated in the pedestrian concourse at the O'Hare Terminal Station for future provision of luggage check-in facilities by the airline companies.

Rosemont Station

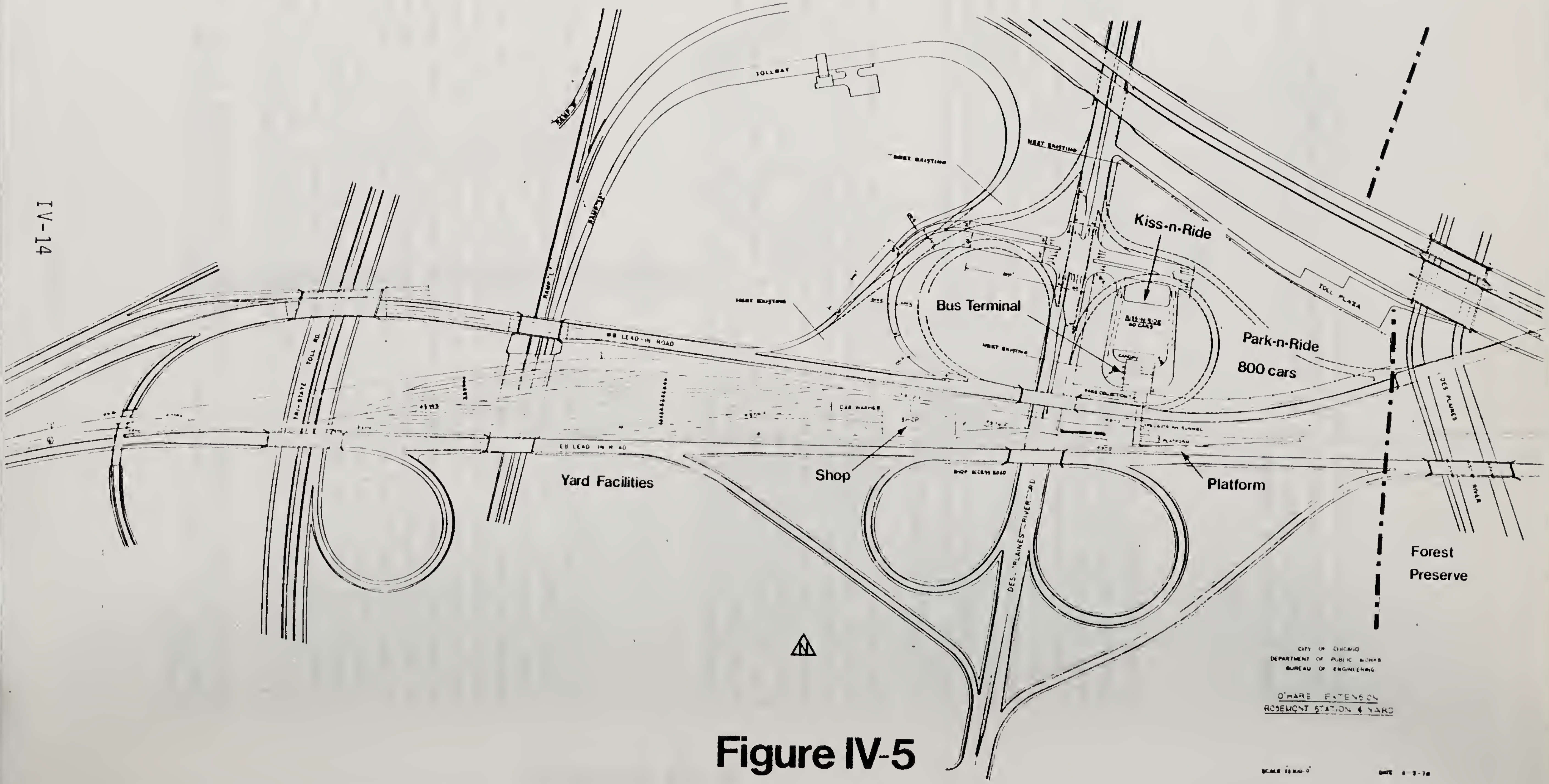


Figure IV-5

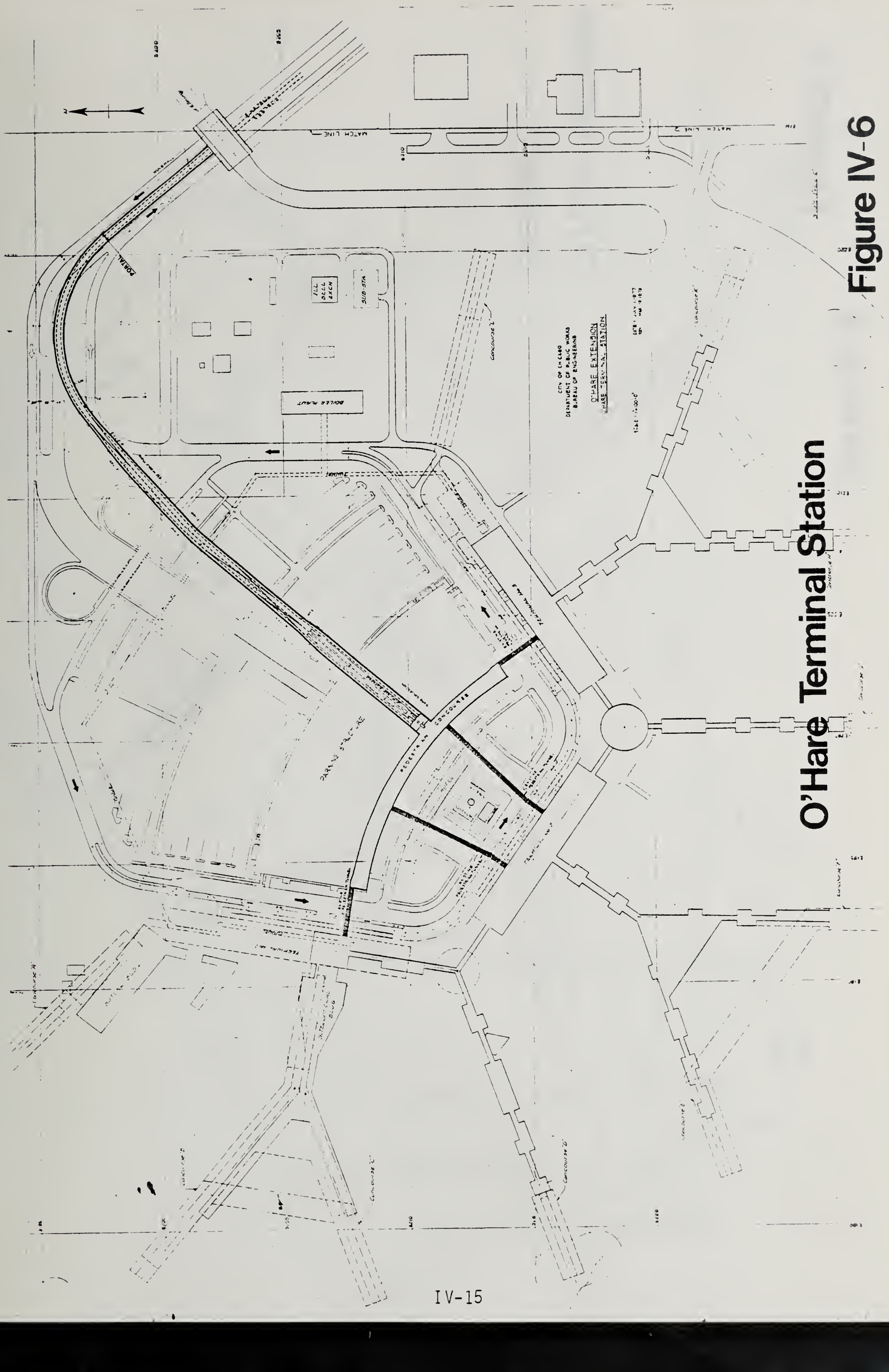
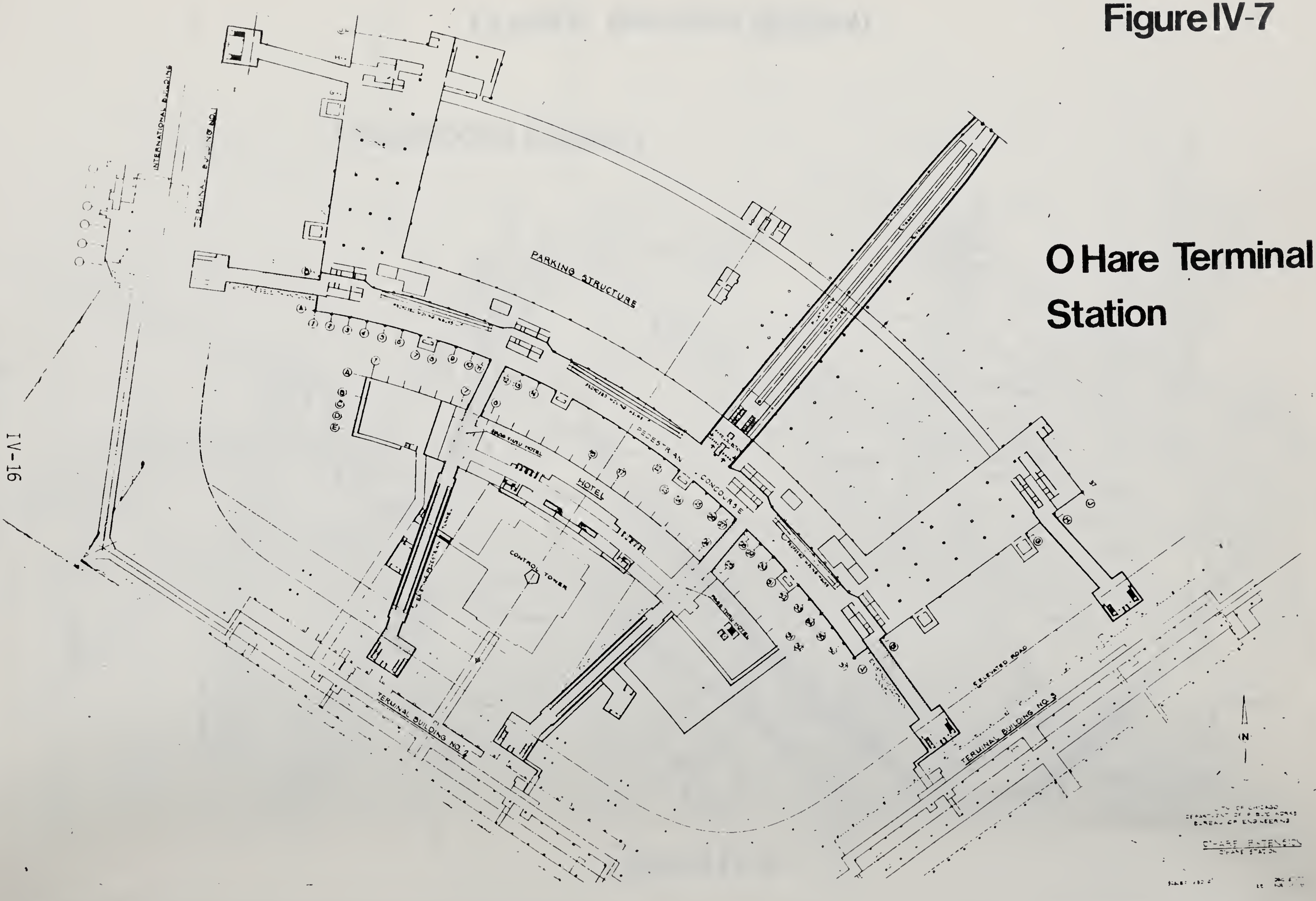


Figure IV-6

O'Hare Terminal Station

Figure IV-7

O Hare Terminal Station



O Hare Terminal Station Profile

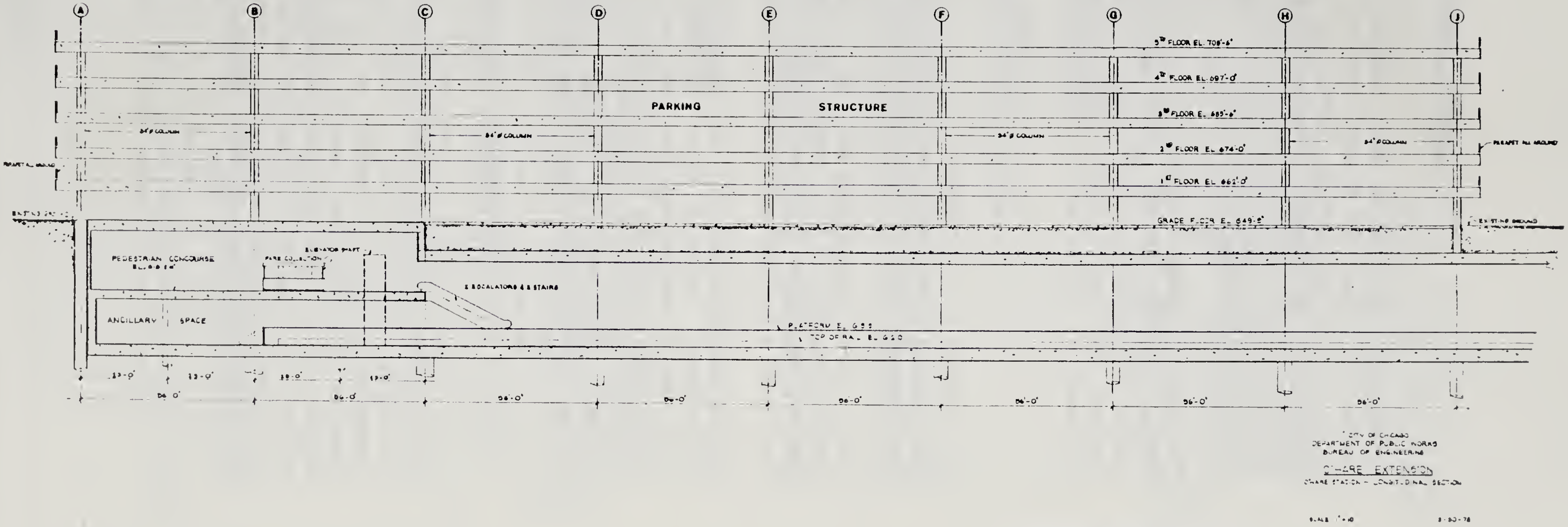


Figure IV-8

5. Traction Power Substations

In addition to traction power substations described as part of the Harlem Avenue and Cumberland Avenue stations, substations will be located along the north side of the Kennedy Expressway east of Nagle Avenue, in the southwest quadrant of the Kennedy Expressway-Des Plaines River Road interchange in Rosemont, and in the area east of the Heating Plant at O'Hare Airport. The traction power substations are all single story buildings with completely enclosed transformer courtyards.

The traction power system will have sufficient capacity so that the malfunction of one component of the system would have only a minor effect on the ability of trains to operate on their design schedules. In addition, emergency power systems will be available at the O'Hare Terminal Station in the event of fire, accident, or public utility supply failure.

C. MAINTENANCE AND STORAGE FACILITIES

The transit car maintenance and storage facilities will be located just west of the Rosemont Station, entirely within the expressway median.

The 10 acre storage yard will be situated between the eastbound and westbound transit tracks and will extend from the Tri-State Tollroad on the west to Des Plaines River Road on the east. The yard's storage capacity will be 258 cars with a maximum peak capacity of 324 cars.

The maintenance shop will be located in the yard area just west of Des Plaines River Road. The shop, which will be able to accommodate 10 cars at one time, will handle running repairs, routine inspections, and unit replacement work. Major repair work and car painting will be handled at the existing maintenance shop in Skokie. A car washer will be located adjacent to the shop. A transportation building will be included as part of this complex, located just east of Des Plaines River Road. (See Figure IV-5 for detail.)

D. TRACK, ROADBED, AND OPERATIONAL REQUIREMENTS

As the proposed system construction will comprise an extension of the existing CTA rapid transit facility, it will be developed in conformity with existing general engineering standards of the CTA. In all segments of the O'Hare Extension, 115 #/yd. rail section will be used. Where practical, continuous welded rail will be employed to reduce track joints, reduce maintenance, and improve ride quality. Standard gauge track, 4-feet-8½ inches, will be used and on a typical segment within the expressway median, a 13 foot minimum distance will separate track centers. Underdrains and surface drainage will be provided for trackbed drainage, and drains will be connected to the existing storm sewer system. Concrete barriers will separate the track from the expressway roadway along the length of the extension. A typical cross-section of the in-median roadbed appears in Figure IV-9A.

Although track used in subway segments will be the same as that used in the expressway median, the material used in the subway trackbed may not be the same. A final decision on in-tunnel track installation will be made during final design and will be based on latest available advanced technology and innovative materials to minimize noise, vibration and costs. Ventilation fans and pumps will be provided as required for safe dependable transit operation in subway segments. Cross-sections of various tunnel sections appear in Figure IV-9B.

E. TRANSIT OPERATIONS

1. Airport Service

The O'Hare station will be an "A/B" stop and thus served by all trains on the Northwest route. Trains will arrive and depart the O'Hare station every 2½ minutes during peak hours, every 5 minutes during regular daytime hours, and every 15 minutes when night service is in effect. As with all other stations on the Northwest line, trains operate on a 24 hour basis.

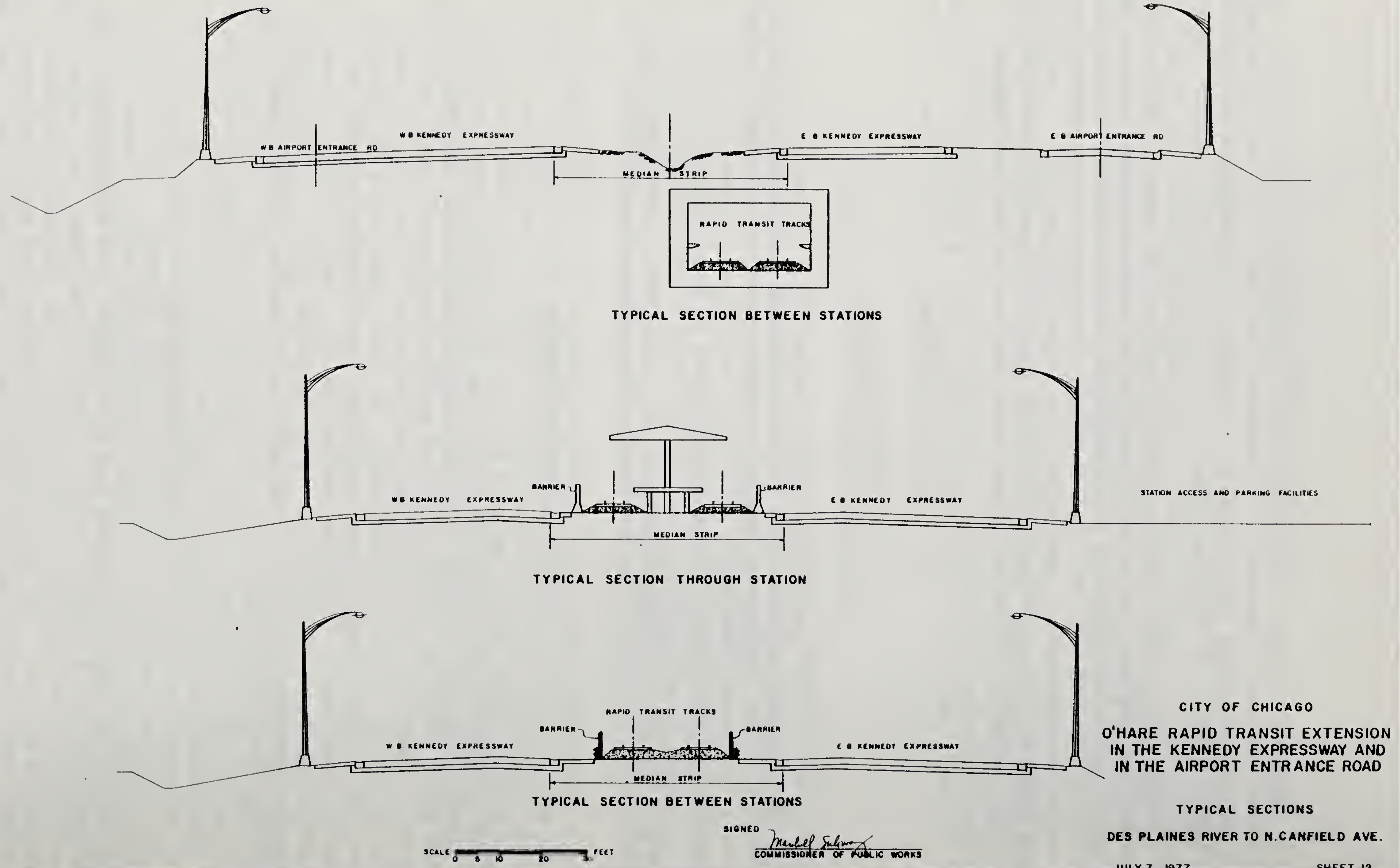
The three track configuration at O'Hare will allow sufficient space for train hold-over so that on-time operations can be maintained.

2. Commuter Service

Final decisions regarding the exact type of service to be provided at the intermediate stations have not been made by the transit operators - the CTA and the RTA. The intermediate stations will be served with the CTA's A/B skip-stop plan. Under this plan, stations designated as "A" or "B" stop would be served by "A" or "B" trains, respectively. An "A/B" stop would be served by both "A" and "B" trains. For skip-stop stations, service headways will be 5 minutes during peak hours, 10 minutes during the day, and 15 minutes during night service when skip-stop service is discontinued and all trains stop at all stations. Service headways for "A/B" stops will be 2½ minutes during peak hours and 5 minutes during the day.

3. Feeder Bus Service

An extensive feeder bus network will be established to complement the O'Hare Extension's rapid transit service. Many of the feeder bus routes represent existing CTA and suburban routes which will be changed to terminate or stop at extension stations. In some cases, new routes have been developed, and existing routes, whose service would be duplicated by the transit line, have been



CITY OF CHICAGO

O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

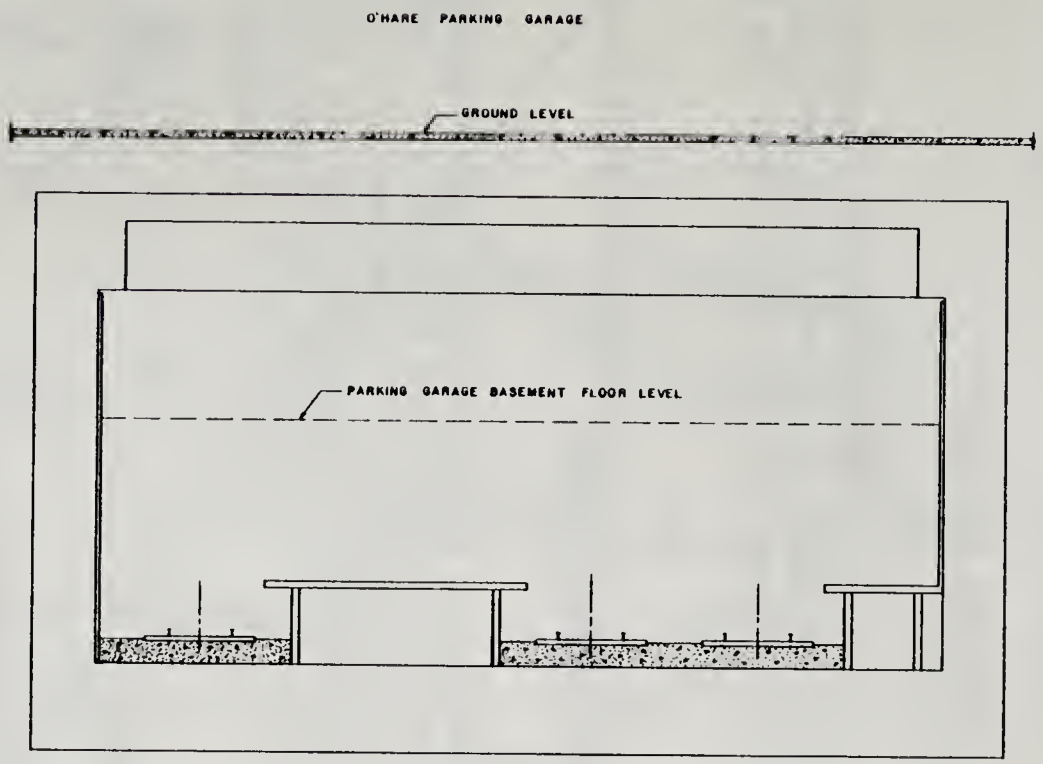
TYPICAL SECTIONS

DES PLAINES RIVER TO N. CANFIELD AVE.

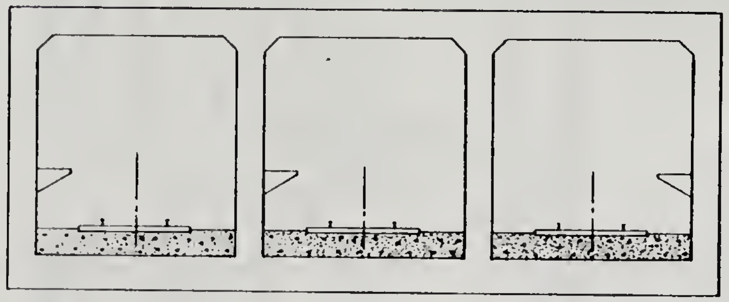
JULY 7, 1977 SHEET 12

SIGNED Marshall Suloway
COMMISSIONER OF PUBLIC WORKS

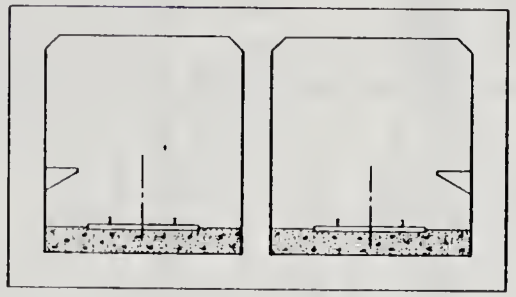
Typical Sections **Figure IV-9A**



TYPICAL SECTION THROUGH STATION
(This typical section does not reflect recent design changes.)



TYPICAL TUNNEL SECTION-3 TRACK



TYPICAL TUNNEL SECTION-2 TRACK

SCALE 0 4 8 16 FEET

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O'HARE RAPID TRANSIT EXTENSION
IN THE KENNEDY EXPRESSWAY AND
IN THE AIRPORT ENTRANCE ROAD

TYPICAL SECTIONS

O'HARE AIRPORT TUNNEL

JULY 7, 1977 SHEET 10

Typical Sections

Figure IV-9B

eliminated. Figure IV-10 delineates the preliminary routing of the O'Hare Extension feeder bus routes.

4. Airport Employee Shuttle

Once rapid transit operations begin on the O'Hare Extension, operation of the #40 O'Hare Express Bus will be discontinued. As a result, a new bus service will be initiated to provide employee access to the Cargo Area, now served by the O'Hare Express Bus.

5. Patronage and Revenue

The patronage for the O'Hare Extension is given below. These numbers reflect total daily riders on the extension. The patronage figures are divided into two groups: new and diverted. New passengers are those new to the CTA system, and diverted passengers are those passengers presently using the CTA rapid transit system diverted from existing stations to stations on the extension.

TABLE IV-1

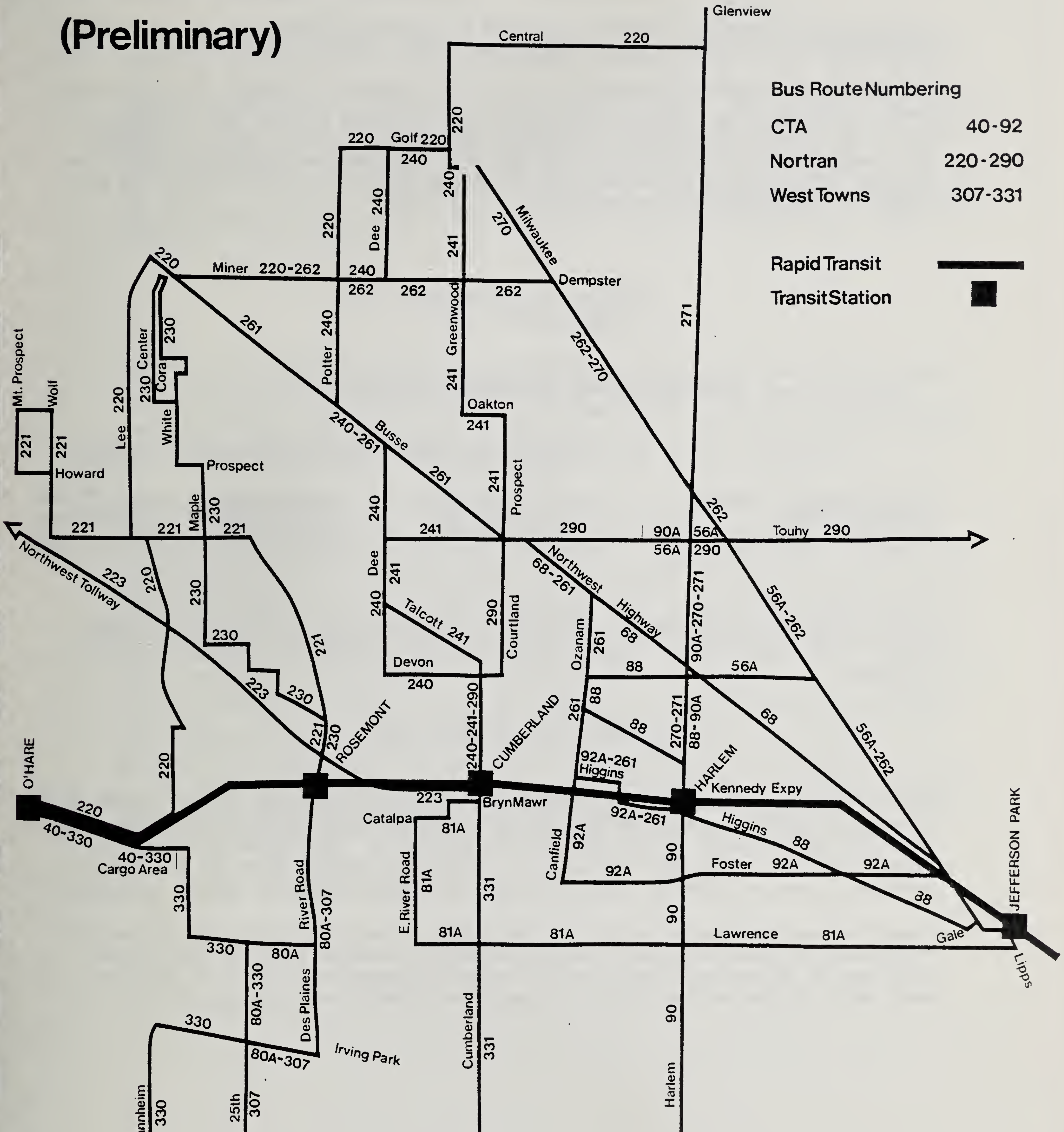
O'HARE EXTENSION PATRONAGE - 1982

	Station				
CATEGORY	HARLEM	CUMBERLAND	ROSEMONT	O'HARE	TOTAL
New	3,000	4,900	4,500	21,600	34,000
Diverted	6,800	2,000	0	2,400	11,200
TOTAL	9,800	6,900	4,500	24,000	45,200

These patronage estimates differ from those presented for the recommended alternative as presented in Chapter III. The estimates presented in Chapter III are less sophisticated estimates generated in a manner consistent with the generation of patronage figures for other alternatives under study, and are therefore used for comparative purposes in Chapter III. The above patronage estimates are more detailed figures generated for the recommended alternative, i.e., the proposed project. Had patronage figures for all alternatives under study been generated in a manner similar to that used to produce the above figures,

Figure IV-10

O'Hare Extension Feeder Bus Routes (Preliminary)



differences in levels of service provided by various alternatives would result in the same relationship among alternatives under the patronage criteria.

The operation of the O'Hare Extension and its associated feeder bus network will affect the operating expenses and revenues of both the CTA and the suburban bus lines providing service to the extension. The following table indicates the changes in both CTA and suburban bus line revenues and expenses, as well as changes in CTA and suburban bus line operating deficits that will occur as a result of the extension's operation.

TABLE IV-2

COST AND REVENUE DATA (1977 DOLLARS)

	Bus Operations	Rail Operations	TOTAL
Operating Cost Change	- $1,285,000	$9,080,000	$7,795,000
Revenue Change	- $ 160,000	$4,840,000	$4,680,000
Operating Deficit Change	- $1,125,000	$4,240,000	$3,115,000

A more complete discussion of the O'Hare Extension's impacts both on patronage and on costs and revenues appears in appropriate sections of Chapter V of this statement.

F. CIRCULATION AT O'HARE AIRPORT

At present, air passengers and airport visitors can be dropped off or picked up along the length of each terminal building; or they can park in the garage, its adjoining open lot, or Lot B adjacent to Terminal 3. The majority of people choose the main garage and lot, as its capacity is greater than Lot B's and it provides access to each of the terminals while Lot B primarily serves Terminal 3.

Those persons who choose to park in the garage or main lot must walk to one of five elevator banks which are labeled according to which airlines they serve. Each bank of elevators connects with a separate pedestrian tunnel at the basement level of the parking structure, with two tunnels serving each of the domestic terminals and one going to the international terminal.

The O'Hare rapid transit station platform will be located at the sub-basement level of the garage structure and slightly off-center so as not to interfere with the garage's structural supports. Passengers will move to the mezzanine level of the station, which is at the basement level of the garage. The station mezzanine will open directly onto a pedestrian concourse, which will, in turn, provide access to both pedestrian walkways connecting to Terminal 2, to one pedestrian tunnel connecting to Terminal 1, the International Terminal, and to one pedestrian tunnel connecting to Terminal 3. Both the pedestrian concourse and the pedestrian tunnels to Terminal 2 will have moving walkways. (Refer to Figure IV-7 for detail.)

G. COORDINATED IMPROVEMENTS

Another improvement is currently programmed by the CTA for the West-Northwest line, consisting of platform lengthening at ten stations. These stations can accommodate only six car trains at present, while existing demand warrants the use of eight car trains during the peak hours. It is expected that this improvement will be completed prior to completion of the extension.

Roadway improvements are planned at each station location to accommodate the park-n-ride structures and expected increases in peak hour traffic volumes. At Harlem, the existing eastbound exit ramp will be reconstructed to merge with the eastbound lanes of Higgins Road, and the westbound lanes of Higgins will be grade separated to allow for smoother traffic flow. Also at Harlem, the ramp providing access to the eastbound expressway lanes from southbound Harlem will be removed. This movement will be handled by an existing entrance ramp cost of Harlem Avenue via a new signalized intersection. (See Figure IV-3.) At Cumberland, one ramp in the southwest quadrant of the interchange will be removed, and traffic movements it handled will be shifted to a slightly modified southeast quadrant. The second ramp in the southwest quadrant will be slightly shifted and reconstructed, but will remain in the quadrant. (See Figure IV-4.) At Rosemont, one quadrant of the cloverleaf interchange will be removed and ramps in the northwest quadrant will replace them for access to or egress from the expressway. (See Figure IV-5.) It is also expected that signalization modifications will be made at the major intersections near each park-n-ride.

V. ENVIRONMENTAL IMPACT OF THE RECOMMENDED ALTERNATIVE

A. CONSTRUCTION

1. Disruption to Vehicular Traffic

The construction of the O'Hare Extension will affect vehicular traffic movements on the Kennedy Expressway, at O'Hare Airport, and at the three intermediate station sites.

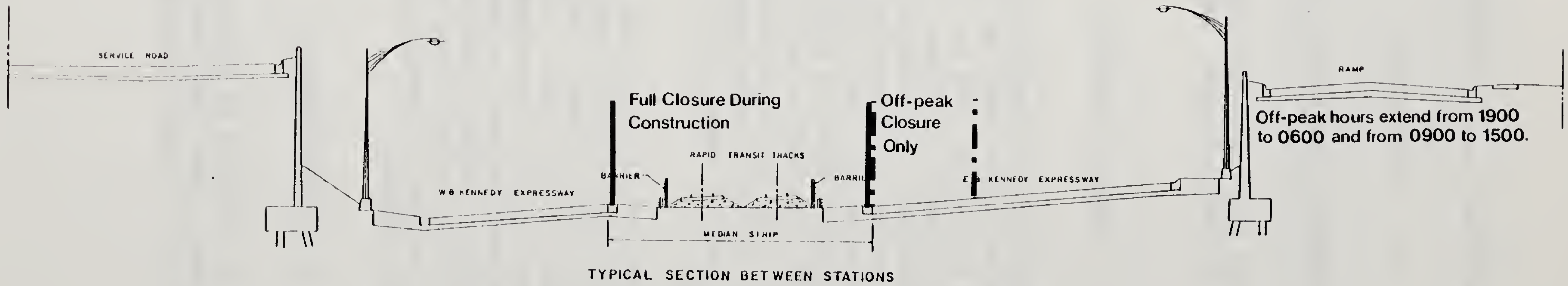
a. Kennedy Expressway

At all points along the median of the Kennedy Expressway from Foster Avenue to the airport, median preparation, track work, and other construction activities will require the closing of the inside lane and shoulder during off-peak hours. These closings are required primarily to allow access to the median barriers and the reconstruction of shoulders. The length of lane and shoulder closure to occur at any given time has not yet been determined; however, the construction activities in the median are expected to be ongoing for about two years. Bottlenecks and traffic delays can be expected to occur throughout construction as backups develop downstream of construction activities. Contractors will be instructed to keep all lanes clear during peak hours, but disruption may extend into peak traffic periods if delays or other problems slow the clearing of construction equipment. Figure V-1 shows typical lane closures required to permit construction operations.

One point along the expressway construction path requires further attention. At the Kennedy Expressway-Northwest Tollway junction, a temporary roadway will be provided to detour traffic around subway construction. The subway will pass under the southeast bound tollway lanes. Since open cut construction will be employed, a temporary roadway will be provided west of the construction site to allow vehicles travelling southeastward on the tollway to move directly onto the eastbound Kennedy Expressway. Subway construction activities will require about 14 months to complete. During this time, traffic inbound on the Northwest Tollway will encounter minor delays, as vehicles negotiate the detour and merge with the eastbound expressway traffic.

b. O'Hare Airport

Three airport roadways will be affected by construction at O'Hare Airport. The transit line will enter a subway tunnel and cross under the expressway roadway leaving the airport and continue in tunnel to the stub-end transit station



Full Closure During Construction

Off-peak Closure Only

Off-peak hours extend from 1900 to 0600 and from 0900 to 1500.

Typical Construction Zone

Figure V-1

beneath the parking structure. Since the open cut method will again be used for subway construction, a combination of temporary detour roadways and roadway decking will be required to insure that egress from the airport is maintained during subway construction.

The ramp providing access from the parking garage to the terminal arrival and departure roadways also lies in the path of the transit subway tunnel. Either decking or the construction of a temporary roadway will be used to allow vehicular movement from the garage to the terminals during construction.

Finally, decking will be used on the roadway bridging over the garage entrance roadway, as the former again lies in the tunnel's path. The temporary decking will provide for continuous access to the airport bus and taxi lots adjacent to this roadway and for the recirculation of airport traffic.

Subway construction through the open parking lot and parking structure will result in the temporary loss of about 530 of the 11,724 parking spaces provided in the parking structure and adjacent main lot. Given the capacity of the parking structure and adjacent lot, the temporary loss of 200 spaces should not create serious harm. However, additional 2,260 spaces are available to two other parking lots more remote from the terminal buildings. Decking will be used to provide access across open cut sections during construction as required to allow vehicular circulation in the parking lot. Construction activities will have no effect on levels 2 through 6 in the airport parking structure.

Construction activities at the airport will take about 16 months to complete. The main effects of airport construction are expected to result from impeded vehicular egress. Vehicles leaving the airport will be slowed while negotiating the detour around subway construction, which could create further delays upstream during the peak hours. The detours and temporary decking on other internal airport roadways are not expected to create significant delays.

c. Intermediate Station Sites

Construction of the intermediate station complexes will have certain common effects on both expressway and local traffic. Station construction at each site will require the closure of both inside shoulders of the expressway for the full construction period. The inside expressway lanes will also be closed during off-peak traffic periods during part of the construction period. Reconstruction of expressway entrance and exit ramps at each station site will also require some temporary measures. Although no decisions have yet been made on traffic rerouting at individual ramp reconstruction sites, full access both to and from the expressway will be provided during construction. The selection of rerouting schemes at the ramp sites will be made in coordination with the Illinois Department of Transportation and the Federal Highway Administration.

Specific construction operations which will affect traffic at each site are discussed below.

i. Harlem Avenue Station and Park-n-Ride

As was mentioned above, construction of the Harlem Avenue Station will require the closure of both inside expressway shoulders and, at times, the closure of the inside expressway lanes during construction. The Harlem Avenue Park-n-Ride is to be constructed between the expressway and Higgins Avenue. As a result, the outside shoulder of the eastbound express roadway will be closed during park-n-ride construction. The outside eastbound lane will also be closed during off-peak hours. Lane closures will be staged in such a manner as to assure two lanes are open to traffic at all times. Placement of girders for the auto-bus bridge across the expressway will require the full closure of one express roadway at a time while construction work is carried on overhead. This operation will be of short duration, about 15 minutes, and will be confined to periods of very light traffic, for example between midnight and 5 a.m. on weekdays. Other disruption to traffic will occur due to construction activities on Harlem and Higgins Avenues and the park-n-ride and kiss-n-ride construction activity adjacent to Higgins Avenue. Construction activities at the Harlem Avenue Station site will take approximately 18 months to complete.

ii. Cumberland Avenue Station and Park-n-Ride

At Cumberland Avenue, expressway lane closures may be required during off-peak hours to allow construction of the pedestrian overpass. Additional traffic delays will result from construction activities on Cumberland Avenue, as well as from the reconstruction of the Cumberland Avenue-Bryn Mawr Avenue intersection. Construction activities at this station site will also take about 18 months to complete.

iii. Rosemont Station and Park-n-Ride

Construction activity in the vicinity of the Rosemont Station will include building bridge structures, one for each of the two directional transit tracks, and in some locations, one track for storage yard operations over each of three roadways: Des Plaines River Road, the Tri-State Tollway, and Tollway Ramps "32" and "L" which distribute traffic from the Northbound Tri-State Tollway to the Northwest Tollway and the Kennedy Expressway. A structure for tracks in the Rosemont Yard will also lie over Ramps "32" and "L".

The placing of girders over each of these roadways will require short term closure of one-half of the roadway at a time, or, in the case of the Tri-State Tollway, short term closure of one express roadway during off-peak hours. Again, special care will be taken to insure that roadway closures occur in periods of very light traffic.

In addition, the open cut construction of the Rosemont Station pedestrian tunnel between the bus terminal and station platform will disrupt traffic on the westbound Kennedy Expressway. A temporary road in the expressway median or partial closure of the westbound expressway lanes will be required to complete construction of the pedestrian tunnel.

West of the Rosemont Station site at Old Mannheim Road, two transit bridges will be built over the roadway. The effects during construction will be the same as other bridge locations.

Construction activities at this station site will again take about 18 months to complete.

2. Solid Waste Disposal

Construction of the two subway segments, the O'Hare terminal station, and the intermediate stations will create solid waste in the form of excavated materials. All excavated materials suitable for use as fill will be used for leveling the Rosemont Yard area at Des Plaines River Road and for leveling the expressway median. Any spoil material resulting from excavation could be used to level certain areas within O'Hare Airport boundaries. If such levelling is done, all permits and authorizations required for such activity will be secured beforehand. If spoil material is not put to such use, the contractor becomes responsible for securing permits and authorizations for the disposal of the material.

If construction phasing allows, fill material from excavation sites could be taken directly to the Rosemont Yard construction area. If the excavated material cannot be taken directly to the construction site, it will be stored until such time as it is needed. Excavated material from airport station and subway tunnel construction would be stored at the existing O'Hare Airport solid waste disposal site. Excavated material from subway construction at the expressway-tollway junction and from intermediate station excavation could be stored at the Rosemont Yard site due to the junction's proximity to excavation sites. If fill materials are stored at the Rosemont Yard site, the storage location would lie west of Des Plaines River Road to prevent any runoff into the Des Plaines River.

Excavation material to be deposited or stored at the airport disposal site will be transported via internal airport roadways to the site. Access to the airport from the subway construction site at the expressway-tollway junction will be made via the expressway. Transportation of fill materials to construction sites or to the Rosemont Yard area for storage will again take place via the expressway. Transport vehicles will be provided direct access to the Rosemont Yard construction site from the inside shoulders of both the east and westbound Kennedy Expressway lanes. The use of the expressway, the internal access roadways at the airport, and the avoidance wherever possible of city streets will minimize traffic disruption due to the transportation of excavated materials. Loading and transportation of excavated materials will be conducted so as to minimize spillage.

All actions regarding the removal and disposal of solid waste will be conducted in accordance with the following governmental regulations:

Federal - The Solid Waste Disposal Act, 1965
State - The Environmental Protection Act, 1970
- Solid Waste Regulations, The Illinois Pollution Control Board, 1973
Local - Environmental Control Ordinance, Dumping of Refuse; Municipal Code of Chicago, 1970.

3. Effects on the Physical Environment

For the most part, construction effects on the physical environment will be short term and characteristic of normal construction activities. A certain amount of dust and noise will result from preparing the median, laying tracks, adjusting roadways, and building parking and maintenance structures.

The construction effects associated with activities carried on in the expressway median will be partially mitigated by the depressed character of the roadway. Noise from the operation of heavy machinery and any dust from earth movement will be somewhat shielded from adjacent development; and further noise impact mitigation will result from the requirement that contractors adhere to the Chicago Noise Ordinance and the Occupational Health and Safety Act (OSHA), which set standards for construction equipment.

At park-n-ride locations, building the structures and making roadway improvements will involve short term nuisances with noise and perhaps dust. Construction techniques for mitigating these impacts will be employed to the extent practicable.

Construction of the transit bridge over the Des Plaines, which is at this point a nonnavigable waterway, will involve placing bridge supports in the embankments on either side of the river, which could potentially cause runoff material to enter the river. Construction specifications will include provisions for the immediate removal of debris from the enbankments. The work is expected to take place in coffer dams behind steel sheet piling, thus minimizing the potential for pollution of the river or bank erosion.

Excavation operations east of the Des Plaines River could result in the temporary dewatering of a shallow aquifer as the tunnel will pass through a water bearing sand layer. If temporary dewatering occurs and consequent pumping operations are required, water will be pumped into a settling basin, where the water will be allowed to clear before it is discharged into the Des Plaines River. An Illinois Environmental Protection Agency National Pollutant Discharge Elimination System Permit (NPDES) will be acquired before any pumping operations can begin. Any temporary dewatering in the tunnel area is not expected to have significant effect on the ground water level or surrounding plant life.

Excavation at O'Hare Airport will occur under the outbound roadway, the main parking lot, and the parking garage. The path of the tunnel has been arranged so that garage caissons will be interfered with as little as possible, and special support structures will be used for construction of the terminal station. The exact type of support structures to be used are still under study. All problems associated with the removal of garage caissons or ground settling will be taken into account in final design.

During construction work in the expressway median, rain water will be diverted to the existing storm sewer system and will not be permitted to cause contamination of surrounding areas.

No archaeologically important sites will be affected by the O'Hare Extension project, as determined by the Illinois Department of Conservation. (See Chapter VI.)

4. Employment During Construction

During the 2 to 3 years required for the completion of the Extension, a number of jobs will be created, primarily for members of the unionized trade work force.

Although it is impossible to predict the actual number of positions created by this project prior to accepting bids, it has been estimated that construction will require a total of nearly 21,500 man-months of labor. This translates to between 1000 and 1200 full time positions during peak construction. The part time nature of construction work would indicate that this will be the minimum number of people employed during the peak period.

The labor force employed in the construction of the Extension is expected to comprise mostly union tradesmen who currently reside in the Chicago area. Thus, no impacts associated with worker relocation are anticipated.

5. Energy

An expenditure of energy will be required for the construction of O'Hare Extension. Although no data is available to quantify the amount of energy expended during construction, it is not expected to have a significant impact on regional energy consumption.

B. GEOLOGY AND SOILS

The geology of the study area is described in Chapter II, Section D.3.a. of this document. The geology and soils in the area will be generally undisturbed by the O'Hare Extension. Tunnel segments however, do require some specific consideration.

The subway tunnel at the Kennedy Expressway-Northwest Tollway junction will be in the floodplain of the Des Plaines River. The original floodplain was overlain with landfill during expressway construction to elevate the roadway above the Des Plaines River valley. In this area, an extensive sand layer ranging in thickness from 2 to 8 feet has been found at a depth of approximately 4 to 14 feet beneath the original ground surface. Borings conducted by the Department of Public Works indicate that ground water is contained on the sand layer which is located above the normal level of the Des Plaines River. Although the subway tunnel will pass through the sand layer, ground water flow will not be significantly obstructed and the tunnel structure will be impervious to infiltration. As a result, no permanent change in the ground water level nor any detrimental effect on the surrounding forested areas of the Cook County Forest Preserve District are expected. (See Figures V-2 and V-3.)

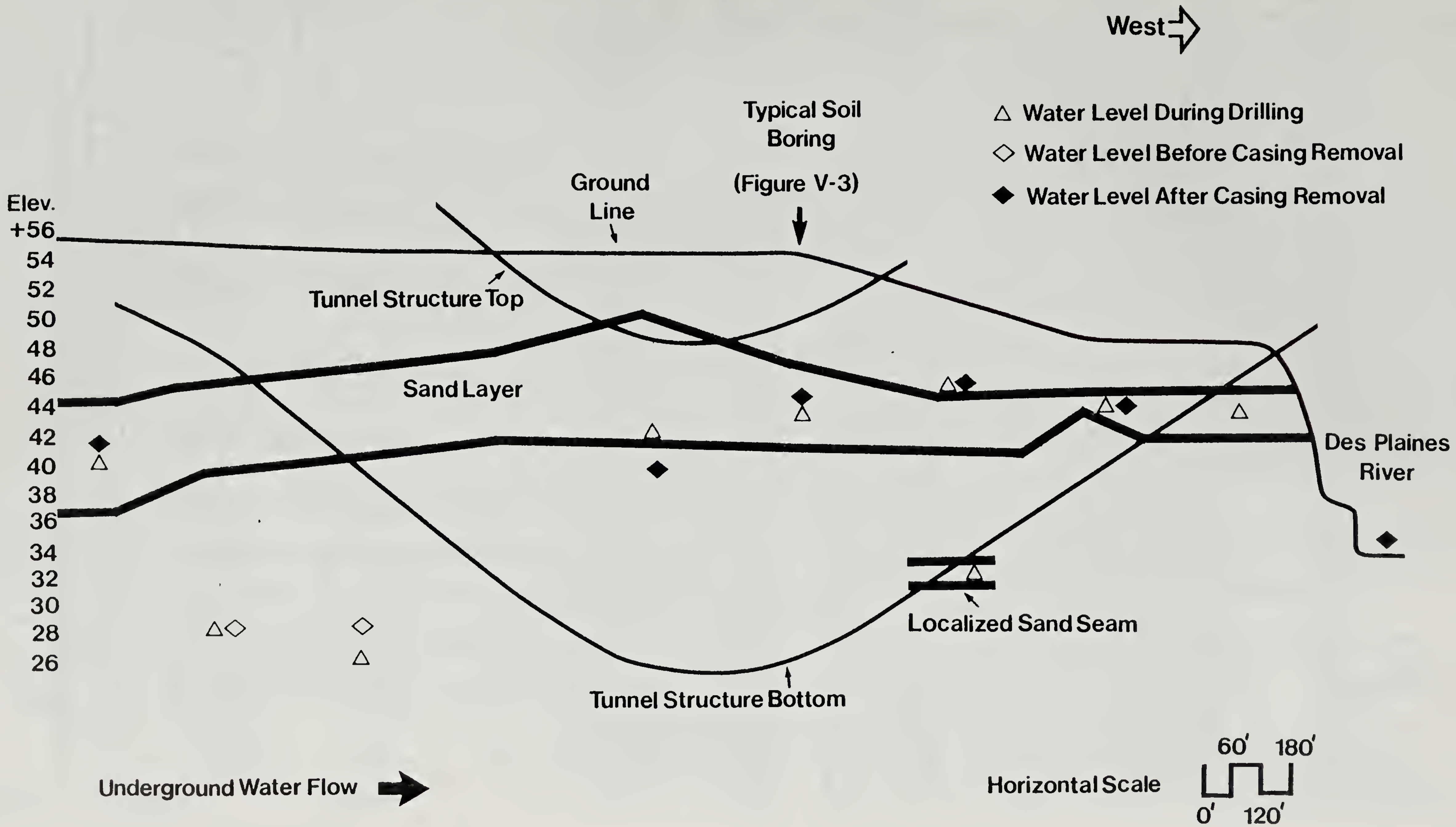
No ground water or unusual geological conditions have been discovered in previous soil borings at O'Hare Airport, the only other subway tunnel location on the Extension.

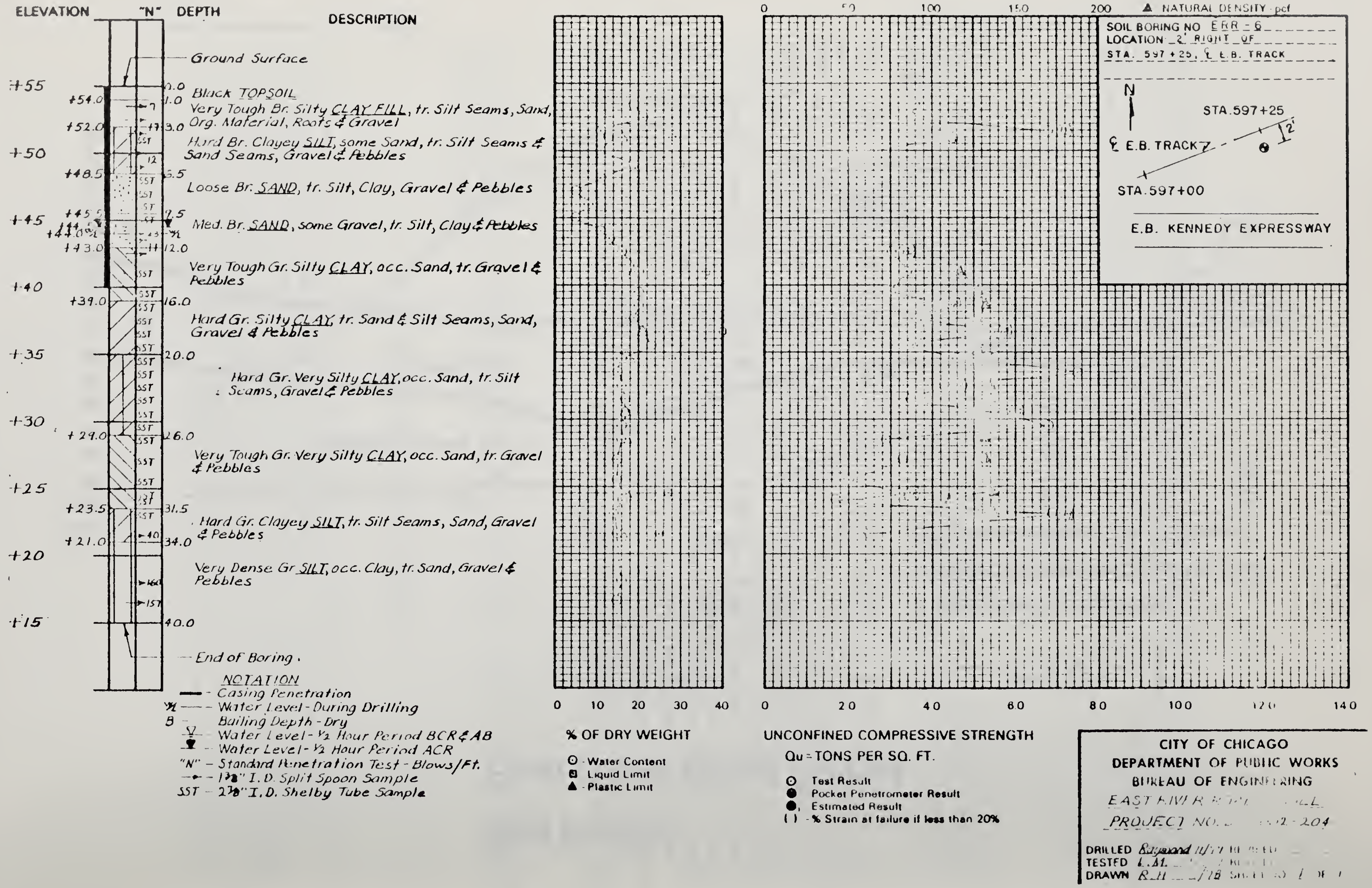
C. WATER QUALITY AND HYDROLOGY

There are no features of the proposed project which are expected to have a noticeable effect upon the area's water quality or hydrologic balance. Neither the transit right-of-way in the Kennedy Expressway median nor the proposed Park-n-Ride facility sites play a significant role in groundwater recharge or evapo-transpiration. These locations will continue to be drained by the regional storm sewer system of the Metropolitan Sanitary District of Greater Chicago. The loss of any existing groundcover and its associated

Figure V-2

Soil Profile
East River Road Tunnel




ELEVATION
"N"
DEPTH
DESCRIPTION
Ground Surface
+55
+50
+45
+40
+35
+30
+25
+20
+15
+54.0
+52.0
+48.5
+45.5
+44.0
+43.0
+39.0
+29.0
+23.5
+21.0
0.0
1.0
3.0
6.5
9.5
12.0
16.0
20.0
26.0
31.5
34.0
40.0
7
17
12
43
11
40
160
157
SST
Black TOPSOIL
Very Tough Br. Silty CLAY FILL, tr. Silt Seams, Sand, Org. Material, Roots & Gravel
Hard Br. Clayey SILT, some Sand, tr. Silt Seams & Sand Seams, Gravel & Pebbles
Loose Br. SAND, tr. Silt, Clay, Gravel & Pebbles
Med. Br. SAND, some Gravel, tr. Silt, Clay & Pebbles
Very Tough Gr. Silty CLAY, occ. Sand, tr. Gravel & Pebbles
Hard Gr. Silty CLAY, tr. Sand & Silt Seams, Sand, Gravel & Pebbles
Hard Gr. Very Silty CLAY, occ. Sand, tr. Silt Seams, Gravel & Pebbles
Very Tough Gr. Very Silty CLAY, occ. Sand, tr. Gravel & Pebbles
Hard Gr. Clayey SILT, tr. Silt Seams, Sand, Gravel & Pebbles
Very Dense Gr SILT, occ. Clay, tr. Sand, Gravel & Pebbles
End of Boring.
NOTATION
— Casing Penetration
½ — Water Level - During Drilling
B — Bailing Depth - Dry
▽ — Water Level - ½ Hour Period BCR & AB
▼ — Water Level - ½ Hour Period ACR
"N" — Standard Penetration Test - Blows/Ft.
→ — 1⅜" I.D. Split Spoon Sample
SST — 2⅞" I.D. Shelby Tube Sample
0
10
20
30
40
% OF DRY WEIGHT
○ - Water Content
▣ - Liquid Limit
▲ - Plastic Limit
0
50
100
150
200
▲ NATURAL DENSITY pcf
0
20
40
60
80
100
120
140
UNCONFINED COMPRESSIVE STRENGTH
Qu = TONS PER SQ. FT.
○ Test Result
● Pocket Penetrometer Result
● Estimated Result
( ) - % Strain at failure if less than 20%
SOIL BORING NO. EBR - 6
LOCATION 2' RIGHT OF
STA. 597 + 25, ℄ E.B. TRACK
N
STA. 597+25
℄ E.B. TRACK
2'
STA. 597+00
E.B. KENNEDY EXPRESSWAY
CITY OF CHICAGO
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
EAST RIVER
PROJECT NO. 2-204
DRILLED Raymond 11/77
TESTED L.M.
DRAWN R.H. /78
SHEET NO. 1 OF 1

Typical Soil Boring

Figure V-3

rainfall infiltration capacity are not considered significant. Furthermore, since the entire route is drained by the Storm Sewer System, no effects upon local water quality are expected.

While it has been found that the proposed subway tunnel passes through a local sand and gravel aquifer, the impacts associated with disturbance of the aquifer have been determined to be temporary and associated only with construction operations. Once construction is completed, the subway tunnel will be impervious to groundwater infiltration. It has also been found that the tunnel will not cause any significant impediment to groundwater flow in the aquifer since it does not occlude the flow cross-section.

D. FLORA AND FAUNA

Since the proposed project is located within the median of an existing urban expressway, there will be no direct or indirect impacts on flora and fauna along the expressway corridor or within the region.

For purposes of safety, a 32" concrete barrier wall will be constructed between the transit right-of-way and the roadway from the Jefferson Park station to the subway portal. With the possibility of small animals successfully crossing the existing expressway and median being extremely slight, the proposed transit project will have no impact on the movement of wildlife within the study area.

The only non-urban area in close proximity to the project is a ½ mile wide section of Cook County Forest Preserve located east of the Des Plaines River Road interchange. Since no land presently devoted to Forest Preserve or general recreation use will be taken, flora in the Preserve, along the Kennedy corridor, and within the region will not be affected by the project. Located in the western portion of the preserve is the Des Plaines River which flows in a north-south direction. Currently, the Kennedy Expressway passes through the Preserve and crosses the river. Bridge support columns for the expressway are located on each embankment and in the center of the river making passage under the expressway along the river possible. Since support columns for the transit extension over the river will be similar to the expressway support design, an existing bridle path along the west embankment will not be affected. Similarly, present movement of small wildlife from one section of the preserve to another, if such movement does indeed exist, will not be impacted by the operation of the extension.

The possibility currently exists for small wildlife to access the expressway and tollway roadways via the Forest Preserve roadway embankments. Although the extension will not alter these possible movements with respect to the roadway, the concrete barriers which will be constructed will not permit some animals to enter the transit roadbed.

In the Des Plaines River watershed, 16 species of amphibians, 22 species of reptiles, and 46 species of mammals have been identified. Common mammals residing in the Preserve include: eastern cottontail, opossum, racoon, gray squirrel, red fox, and woodchuck.

E. TRANSIT SERVICE

1. Accessibility and Patronage

The primary beneficial impact of the O'Hare Extension is that accessibility in the Kennedy corridor will be improved. Residents of the northwest portion of the study area who are not within convenient distance of the current Jefferson Park terminal will be afforded access to the CTA rapid transit system via the three intermediate stations. The park-n-ride facilities will further enhance accessibility to the CTA system.

The Extension will also beneficially impact access to the CBD, O'Hare Airport, industry in the O'Hare area, and the areas in the vicinity of the intermediate stations. Transit dependent persons will have a greater ease of access to all of these locations and, especially during the peak hours, ease of access will be enhanced for persons choosing the rapid transit mode over other available ground access modes, including airport patrons, commuters, and reverse commuters.

The patronage generated by the O'Hare Extension will be a combination of new riders to the CTA and existing CTA patrons diverted from other CTA rapid transit stations. Most diverted passengers entering or exiting intermediate stations now use the Jefferson Park terminal of the CTA's Milwaukee Line. Listed in Table V-1, are the total daily trips for each station on the O'Hare Extension, broken down by access mode and by new and diverted passngers.

2. System Interface

Since the O'Hare Extension is an addition to an existing transit line, no physical interface impacts will occur. The extension will be fully compatible with other portions of the CTA rail system, and all CTA cars will be operable over the Extension.

TABLE V-1

O'HARE EXTENSION PATRONAGE-1982

STATIONS

CATEGORY	HARLEM	CUMBERLAND	ROSEMONT	O'HARE	TOTAL
Park-N-Ride					
New	800	1,600	1,900	0	4,300
Diverted	800	300	0	0	1,100
Total	1,600	1,900	1,900	0	5,400
Kiss-N-Ride					
New	200	400	600	0	1,200
Diverted	400	200	0	0	600
Total	600	600	600	0	1,800
Feeder Bus					
New	1,400	1,800	1,400	400	5,000
Diverted	2,800	1,000	0	400	5,200
Total	4,200	2,800	1,400	800	10,200
Walk-in					
New	600	1,100	600	21,200	23,500
Diverted	1,800	500	0	2,000	4,300
Total	2,400	1,600	600	23,200	27,800
Station Total					
New	3,000	4,900	4,500	21,600	34,000
Diverted	6,800	2,000	0	2,400	11,200
Total	9,800	6,900	4,500	24,000	45,200

The CTA has programmed the upgrading of ten station platforms on the West-Northwest route to accommodate eight car trains. This is being done independently of the Extension project, and the improvements are expected to be finished prior to the Extension becoming operational. Should the platform lengthenings, for some reason, not be completed before the Extension, the line will have to operate with six car trains during peak hours until all platforms on the West-Northwest route conform in length.

The inclusion of intermediate stations on the Extension will have impacts on the bus segment of the CTA system and the suburban carriers which are planning to provide services at the stations. Final routings have not yet been established by the bus service operators, although preliminary routings are available. It is expected that some bus routes presently serving the Jefferson Park terminal will be rerouted at the routes' far western ends and that some new routes will be created to satisfy the projected demands at each of the intermediate stations. All stations will have bus terminals and park-n-ride and kiss-n-ride facilities. Frequencies of service will be arranged to allow for a convenient bus-rail interface for all transfer passengers. Preliminary bus routings appear in Figure IV-10.

3. Travel Time

Under "normal" driving conditions, the CBD-O'Hare trip requires 55 minutes during the evening peak and 50 minutes during the morning peak, with reverse flow travel averaging about 5-10 minutes less. Deviations from these times, however, can be significant and frequently amount to plus or minus 10 or more minutes. It is not uncommon for the 18 mile trip to require as much as 90 minutes, especially during inclement weather. In a driving study between the Palmer House and O'Hare, The Chicago Area Transportation Study (CATS) determined that "normal" driving times apply to approximately 50% of the peak hour trips. Off-peak travel times with light traffic require a fairly consistent 30 minutes.

The Palmer House-O'Hare airport transit trip will require 47 minutes in both peak and off-peak hours, thus the greatest positive impact on travel time will occur during peak periods of expressway use. It should be noted that the driving times described above include only in-vehicle time and do not account for parking and walking times at trip origins or destinations. Transit travel time includes walking times from the Palmer House Hotel to the Monroe Street Station of the CTA Milwaukee Rapid Transit Line and from the O'Hare Rapid Transit Station to the Baggage Claim Area in Terminal 2.

Coupled with travel time is the relative reliability of on-time arrival that users of the Extension will have. While driving times vary widely, the transit link schedule will be much more consistent and predictable, which is an important feature for both air passengers and commuters.

F. VEHICULAR TRAFFIC

1. O'Hare Airport Traffic

A primary purpose of the O'Hare Extension is to provide the capacity required to satisfy the projected 1985 airport ground access demand. Activity at O'Hare Airport is expected to rise from 22 million enplanements per year in 1977 to 30 million enplanements per year in 1985, a 36% increase. The demand for ground access to the airport will increase at a similar rate. The expected demand for airport access will rise from 180,700 daily person trips in 1977 to 248,900 daily person trips in 1985. This increase in person trips will translate into an increase in vehicular demand.

In 1977, a daily average of 33,200 vehicles entered the airport terminal area during the week of August 15. With the 1977 average daily enplanement of 60,300, an entering volume/average daily enplanement ratio of 0.55 has been derived for present airport operations. The 0.55 value for this ratio is assumed to remain constant through 1985 as long as no rapid transit is provided. The provision of rapid transit service to the airport will divert 24,700 persons from motor vehicles to the transit mode, thus reducing the entering volume/average daily enplanement ratio. The following tables show both the existing traffic volumes at the airport and those expected in 1985. Volumes derived for the "no transit" condition in 1985 have been included for comparative purposes.

Although increases in vehicle volumes at the airport will occur either with or without the Extension, the provision of rapid transit will reduce the vehicle load on the airport roadways. During the 1985 peak hour, the access roadway will be operating at or near capacity with the transit extension. Without the Extension, however, expected traffic volumes would result in service breakdown conditions.

It should be noted that during times when the projected vehicle load on the airport access and terminal roadways is greatest, the transit extension will still have reserve capacity.

The use of the airport parking garage by park-n-ride patrons is expected to be insignificant. The airport garage parking fee for a 10 hour stay, $1.65, is significantly higher than any of the proposals for the full day fee at a park-n-ride, which would be purposely structured to discourage use of the airport garage. Second, the airport garage is inconveniently located for CBD commuters. The garage is located at the terminal end of Ill. 594. The first point at which Ill. 594 intersects a major roadway is 1.3 miles toward the CBD from the airport. Any CBD commuter wanting to use the airport garage as a park-n-ride would be forced to travel at least 1.3 miles away from their destination, then backtrack over this distance again via transit.

It should be stated, however, that it is impossible to ban drivers from using the airport garage for park-n-ride use since it is a public facility.

TABLE V-2

DAILY VEHICLE VOLUMES AT O'HARE AIRPORT

	1977 *	1985 WITH RAPID TRANSIT	1985 WITHOUT RAPID TRANSIT
INBOUND ACCESS ROAD	33,200	40,500	45,200
TO GARAGE	14,200	14,200 **	14,200 **
UPPER LEVEL TERMINAL ROADWAY	17,100	20,600	21,700
LOWER LEVEL TERMINAL ROADWAY	18,200	22,300	25,000
FROM GARAGE	12,700	12,700 **	12,700 **
OUTBOUND ACCESS ROAD	38,400	42,100	47,000
TOTAL PERSON TRIPS VIA ACCESS ROAD	153,600	211,600	211,600

*Averaged metered traffic counts taken by the Chicago Department of Streets and Sanitation August 15th through August 21st, 1977.

**Assumes no additions to garage or growth in garage traffic (garage presently operates at capacity.)

TABLE V- 3

PEAK HOUR TRAFFIC VOLUMES AT O'HARE AIRPORT

	1977		1985 WITH RAPID TRANSIT		1985 WITHOUT RAPID TRANSIT	
	AVERAGE PEAK	MAXIMUM PEAK	AVERAGE PEAK	MAXIMUM PEAK	AVERAGE PEAK	MAXIMUM PEAK
INBOUND ACCESS ROADWAY	2210	2700	2700	3300	3000	3700
UPPER LEVEL TERMINAL ROADWAY	1200	1400	1500	1700	1700	1900
LOWER LEVEL TERMINAL ROADWAY	1300	1600	1500	1900	1700	2200

2. Expressway Traffic

The provision of rapid transit service in the Kennedy Expressway median will give airport users and employees as well as commuters an alternative to automobile travel. In 1985, the project design year, the expected change in mode split will have impacts on both the Kennedy Corridor's ability to satisfy total transportation demand and the Kennedy Expressway's ability to provide adequate levels of service.

The demand for travel to O'Hare Airport is expected to increase by 36% between 1977 and 1985, while commuter trip demand in the Kennedy Corridor increases about 4% over the same period. The O'Hare Extension will provide the additional travel capacity required to satisfy this demand while keeping vehicular traffic demand within the capacity of the expressway.

Higher levels of activity at the airport will increase both person and vehicular trip demand by 1985, which must be satisfied over the capacity constraints on the Kennedy Expressway. The expressway narrows to two lanes in each direction between its junction with the Northwest Tollway and its interchange with the Tri-State Tollway. This expressway segment is presently operating at a "C" level of service during the peak hours. Although, as indicated in the table below, the level of service will worsen in 1985, the traffic load on the expressway lies within acceptable limits. If the transit option were not available, however, travel demand would exceed the expressway's capacity during peak periods of travel.

TABLE V-4

KENNEDY EXPRESSWAY TRAFFIC VOLUMES
WEST OF THE NORTHWEST TOLLWAY JUNCTION

	EASTBOUND	WESTBOUND
1977:		
ADT :	35,700	37,400
Peak	2,700	2,800
1985 - with Transit:		
ADT	43,900	46,400
Peak	3,300	3,500
1985 - No Transit		
ADT	48,800	51,100
Peak	3,700	3,900

Traffic increases would result in expressway operation at a "D" level of service during a 1985 peak hour. Without the transit option, expressway level of service would be reduced to "F" during peak hours.

Expressway segments located closer to the CBD will also accrue benefits from the diversion opportunities created by the transit line's three intermediate stations. The cumulative effect of diverting both airport users and employees and commuters will be significant. To illustrate this impact, traffic volumes on the Kennedy Expressway east of Harlem Avenue, the O'Hare Extension station closest to the CBD, have been projected. Traffic volumes for both with and without transit conditions are included, as well as volumes for 1977.

TABLE V-5

KENNEDY EXPRESSWAY TRAFFIC VOLUMES
EAST OF HARLEM AVENUE

	EASTBOUND (3 Lanes)	WESTBOUND (3 Lanes)
1977:		
ADT	87,000	82,600
Peak (AM or PM)	5,800	5,400
1985 - With Transit:		
ADT	90,500	84,400
Peak (AM)	5,200	5,800
Peak (PM)	6,300	4,700
1985 - No Transit:		
ADT	97,500	91,600
Peak (AM or PM)	6,500	6,100

The 1985 "with transit" figures assume that during a given peak hour no traffic would enter the expressway to "replace" those vehicles removed through the mode switch to transit. If this replacement did occur, peak hour traffic volumes would increase. Since overall travel demand is not expected to fluctuate greatly, the Average Daily Traffic would remain the same. As a result, if the "replacement" did occur, a larger part of the "peak traffic period" vehicle load would be moved during each peak hour, thereby shortening the "peak traffic period."

Levels of service do now, and will after project completion, range from "D" to "F" during peak hours. Although the level of service may not show a marked improvement, the capacity of the Kennedy Corridor will be significantly increased by the addition of the transit mode. Thus, a greater number of daily trips will be made in the corridor with no significant deterioration of traffic conditions on the expressway. Figures for the 1985 "no transit" condition indicate that the demand for travel on the expressway would be well above capacity if no transit service were provided.

3. Local Traffic at Park-n-Ride Sites

One of the impacts associated with the three Park-n-Ride structures is increased vehicular traffic in areas surrounding these garages. The traffic increases are expected to occur in the morning rush period when garages fill and in the evening when they empty. Off-peak use is not expected to generate significant traffic.

In order to assess the impact of garage use on local traffic, traffic patterns with and without the Park-n-Rides have been investigated. It should be noted that in order to best indicate park-n-ride traffic patterns, traffic volumes for the "without park-n-ride" situation were developed by deleting projected park-n-ride movements. All analysis was done using 1985 as the design year.

Also, for all analyses, the garages are assumed to fill within two hours on a workday morning and empty within two hours during the evening. These periods correspond to the morning and evening peak hours of traffic.

a. Harlem Avenue Park-n-Ride

The Harlem Avenue Park-n-Ride, a three level, 685 vehicle capacity garage, will be located in the area bounded by Harlem Avenue, Higgins Avenue, and the Kennedy Expressway. The bottom level will be at the same level as the expressway roadways, and the top level will be at ground level. In order to accommodate this facility, alterations to the existing expressway ramps will be required. The exit ramp from the eastbound expressway lanes will be grade separated to better handle this traffic movement. The existing entrance ramp from southbound Harlem to the eastbound expressway lanes will be eliminated. These ramp movements will be channeled to the entrance ramp off Gregory Street via a new signalized intersection at Harlem Avenue and Gregory Street.

Entrance to the garage will be made from Higgins Avenue with the primary access routes being from the eastbound Kennedy Expressway via eastbound Higgins Avenue, and north and southbound Harlem Avenue. This discussion will assume that the garage has a capacity of 680 cars, and a Kiss-n-Ride capacity of 52 cars. (Refer to Chapter IV, Figure IV- 3 for the Harlem Station Site Plan.)

In each of the two morning hours during which the garage fills, about 62% of the traffic will access from eastbound Higgins Avenue, with 80% of that amount coming from the eastbound Kennedy Expressway. These traffic movements will not create any interference to vehicles exiting the expressway at Higgins Avenue. The relocated exit ramp, 700 feet long, will be located 400 feet west of the garage entrance. This 400 foot distance is more than sufficient to accommodate vehicle queues on Higgins Avenue at the garage entrance.

The remaining garage traffic and the bulk of Kiss-n-Ride and bus traffic will originate north, south, and east of the facility. The auto traffic will pass through the Harlem Avenue-Higgins Avenue intersection, adding about 130 cars to the intersection's approach volumes. Buses will enter the station complex from either Higgins road, adjacent to the Kiss-n-Ride entrance, or from Harlem at Gregory Street. The additional vehicular traffic generated by the Park-n-Ride, Kiss-n-Ride and bus routes will not result in a vehicle volume exceeding the intersection's capacity.

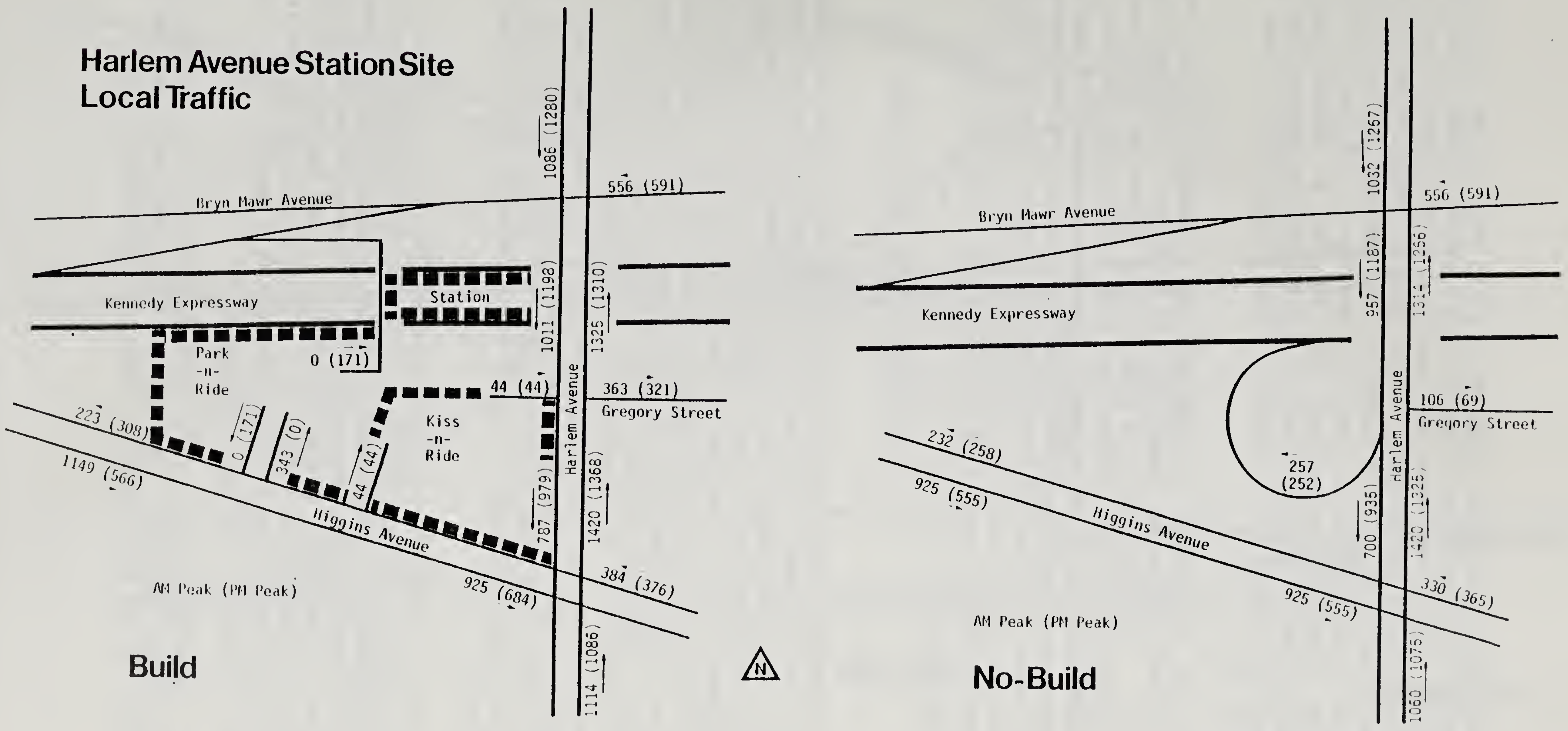
Traffic exiting the Kiss-n-Ride drop-off area and buses entering the station area at Gregory Street will necessitate the placement of traffic signals at the Harlem Avenue-Gregory Street intersection. Although the addition of this signalization will require the use of a more complex signal series, the Harlem Avenue-Gregory Street and Harlem Avenue-Bryn Mawr intersections will both carry traffic volumes within their capacities.

Traffic movements in the evening will be similar to morning traffic movements with some exceptions. About one-half of the existing vehicles will use a direct access bridge to move from the garage to the westbound expressway ramp, thereby avoiding the use of local streets for access to the expressway. Additionally, in the evening rush fewer vehicles will use the eastbound lanes of Higgins Avenue west of Harlem, and more traffic will travel westbound on Higgins and southbound on Harlem Avenue. Nonetheless, all signalized intersections will be operating below their capacity at a "D" level of service.

A comparison of traffic with and without the garage and Kiss-n-Ride shows that the greatest traffic increase will occur on Higgins Avenue west of the garage. Harlem Avenue will carry substantial traffic with or without the project, but the placement of an additional traffic signal between Higgins and Bryn Mawr Avenues is required to accommodate the higher traffic volumes and help alleviate potentially increased congestion. Harlem Avenue north of Bryn Mawr, and Bryn Mawr Avenue, will be affected least by the addition of garage and Kiss-n-Ride oriented traffic. (See Figure V-4.)

The elimination of the free flow ramp providing access to the eastbound Kennedy from southbound Harlem Avenue reduces the number of access points to the expressway. The construction of a signalized intersection at Harlem Avenue and Gregory Street, however, will provide access to the eastbound expressway lanes via Gregory Street with enough capacity to effectively mitigate the loss of the entrance ramp from southbound Harlem Avenue.

Harlem Avenue Station Site Local Traffic



Build

No-Build

Figure V-4

The addition of station oriented traffic will increase the approach volumes of nearby intersections, thus bringing these volumes closer to the intersections' capacities then they would be if the station and its ancillary facilities were not present. As a result, these intersections will be more susceptible to congestion caused by bad weather, holiday traffic, or other unusual conditions. The levels of service at the two existing intersections will be slightly improved over what they are at present due to improved signalization. Station oriented traffic is not expected to use residential streets for access. The layout of local residential street is not conducive to such use.

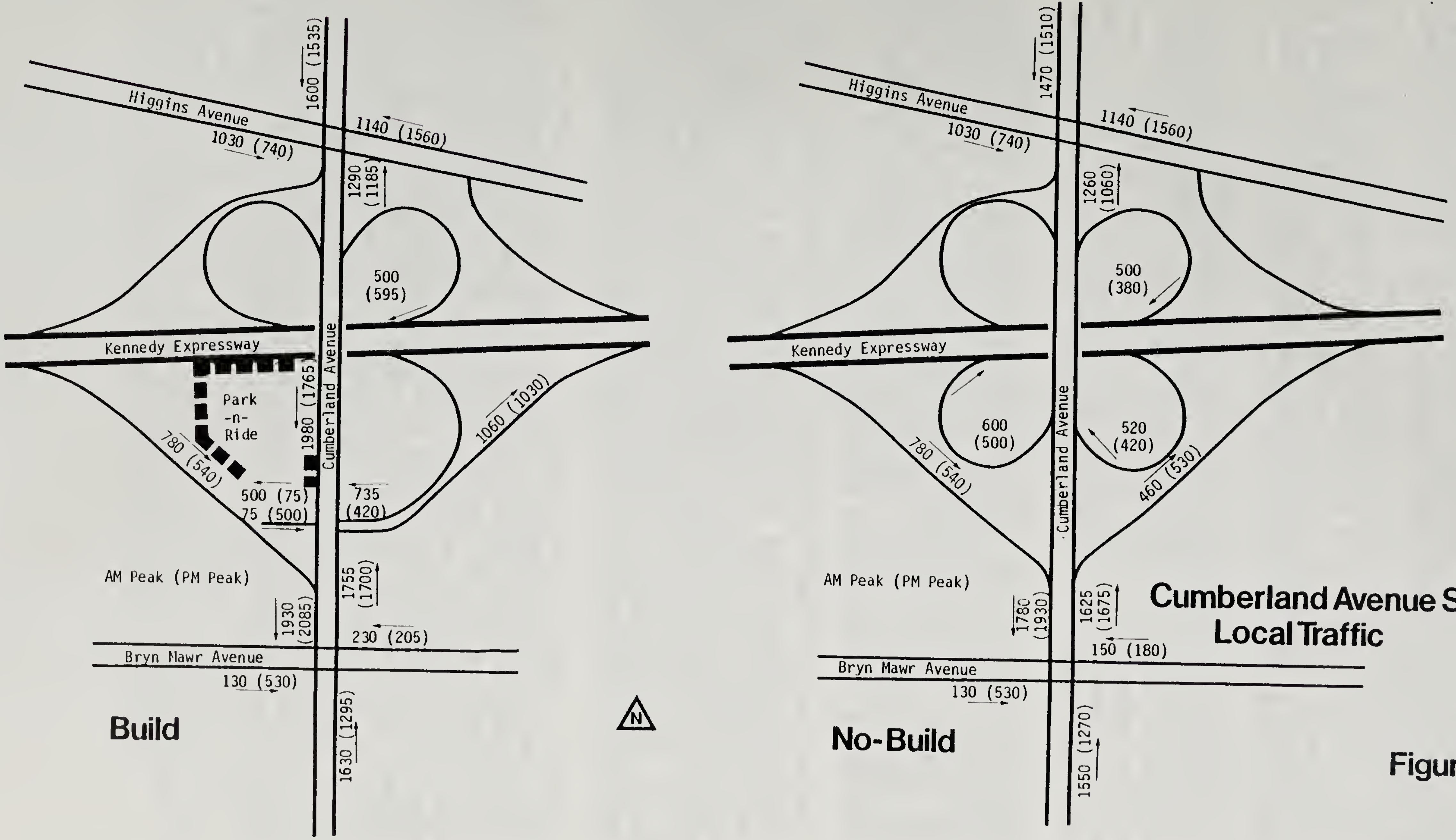
Most areas adjacent to the Harlem Avenue station site are residential with a significant amount of street parking available within walking distance to the station. The provision of a Park-n-Ride at Harlem will substantially increase the number of parking spaces available adjacent to the station itself. Since the Park-n-Ride will be a more convenient location for rapid transit users, on-street parking pressure will be minimized. Significant on-street parking would occur only during periods of very heavy use when the parking demand would exceed the garage capacity. On-street parking could be substantially reduced through a permit parking program, similar to other programs which have proven successful in other areas of the city.

b. Cumberland Avenue Park-n-Ride

The Cumberland Avenue Park-n-Ride, a two level, 850 car capacity garage, will lie in the southwest quadrant of the Cumberland Avenue-Kennedy Expressway cloverleaf interchange. In order to accommodate the garage, Kiss-n-Ride, and bus terminal facilities, alterations to the existing interchange ramp arrangement will be required. The existing ramp providing entrance to the eastbound Kennedy from southbound Cumberland will be eliminated. This movement will be accommodated by the reconstructed entrance ramp in the interchange's southeast quadrant. The latter ramp and the exit ramp in the southeast quadrant of the interchange will be reconstructed to intersect with Cumberland Avenue and will combine to form a new signalized intersection. Entrance to the garage from the eastbound Kennedy will be handled by the reconstructed exit ramp which now provides access to northbound Cumberland from the eastbound expressway lanes. These changes are depicted schematically in Figure V-5.

As was the case with the Harlem Avenue facility, one half of the Cumberland Park-n-Ride's spaces will be filled during each of two morning peak hours. The garage will likewise empty in two hours during the evening peak. One half of the garage's spaces will be filled by autos from the eastbound Kennedy Expressway. These vehicles will use the reconstructed exit ramp for access to the garage through the signalized intersection at the expressway ramp-Cumberland Avenue intersection. As a result, these vehicles will not use local streets for garage access.

The remaining garage traffic will originate in local areas north, south, and east of the facility. Entrance to the garage will be made from Cumberland Avenue, at the same location used by expressway drivers.



Build

No-Build

Cumberland Avenue Station Site
Local Traffic

Figure V-5

Kiss-n-Ride traffic, 75 vehicles per hour, will also originate from the north, south and east, 25 autos from each direction. Entrance to both the Kiss-n-Ride lot and bus terminal area will be made via the same road used for garage access.

Vehicles exiting the Park and Kiss-n-Rides in the evening will use the same streets used for access in the morning, except for expressway drivers who will travel a short distance on northbound Cumberland to the westbound Kennedy Expressway entrance ramp.

The greatest increases in local traffic attributable to station oriented travel will occur on Cumberland. One hunderd seventy autos will travel to the station area from both the north and south during a morning peak, and the same number will exit to the north and south during an evening peak. Vehicle volumes will be greater on the short stretch of northbound Cumberland as 215 autos travel to the westbound Kennedy entrance ramp.

Intersections in the vicinity of the station will all operate below their capacities, but, as was the case at Harlem Avenue, an additional signalized intersection will be required. This intersection, located where garage and ramp traffic intersect with Cumberland Avenue, will slow traffic moving through it, but will not interrupt traffic flow on the expressway. Since more than adequate signal time is available, traffic queues on the signalized exit ramp will not back up onto expressway lanes.

Although the Bryn Mawr-Cumberland, Park-n-Ride-Cumberland, and Higgins-Cumberland intersections will all be operating within their traffic capacities, the addition of station generated traffic will, as in the Harlem Avenue area, bring intersections closer to capacity, resulting in greater chance of breakdown during abnormally heavy traffic or adverse weather conditions than would be the case if no park-n-ride were present. The planned roadway and signalization improvements will, however, result in levels of service after project completion being generally the same as they are at present.

Residential areas in the vicinity of the Cumberland Avenue station are not within easy walking distance. As a result, the presence of the Park-n-Ride is expected to have little effect on on-street parking in these areas. A private parking lot is located adjacent to the northwest quadrant of the Cumberland-Kennedy interchange from which access to the station will be available via the pedestrian bridge over the expressway. This lot serves commercial interests in the area north of the expressway, west of Cumberland Avenue. The presence of the Cumberland Avenue Park-n-Ride will minimize the use of this lot by transit patrons since it is located farther from the station than the Park-n-Ride and access to it is much less direct. Without the alternative of an easy access parking facility, this commercial lot would present a very attractive solution to transit patrons' parking problems.

Reconstruction of the Cumberland Avenue-Kennedy Expressway interchange will result in the elimination of a ramp in the interchange's southwest quadrant. This ramp now provides access from southbound Cumberland to the eastbound Kennedy. The adverse effect created by loss of this access point will be compensated for by the aforementioned reconstruction of the entrance ramp in the southeast quadrant.

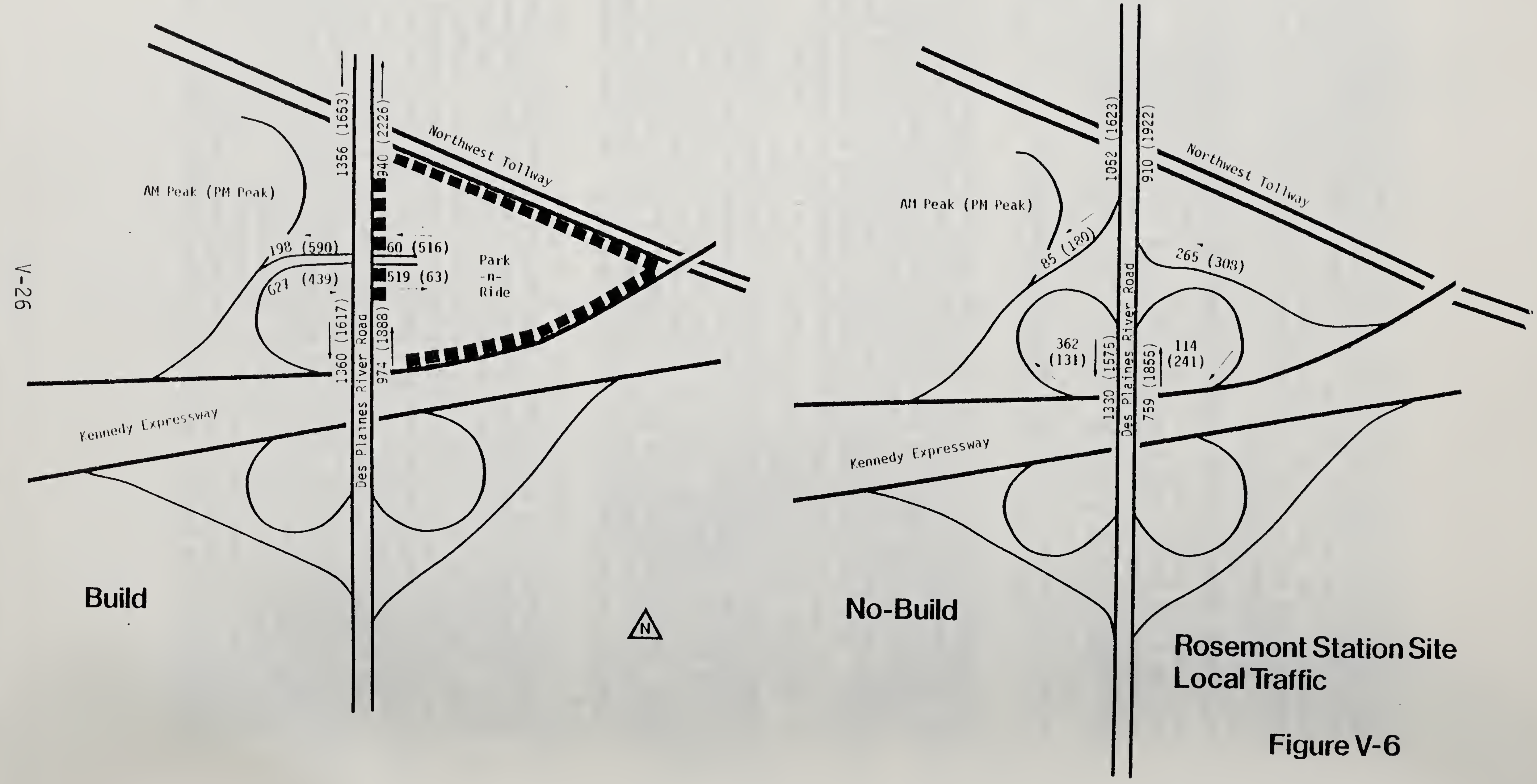
Thus, the reconstructed Cumberland Avenue-Kennedy Expressway interchange will provide the same access and egress as is provided by the existing interchange design with sufficient capacity for all traffic movements. In addition, all garage oriented traffic movements will be made on major arterial streets and expressway ramps, avoiding the use of residential streets in the vicinity.

c. Rosemont Park-n-Ride

The Rosemont Park-n-Ride, an 800 car capacity at grade lot, will be located in the northeast quadrant of the Des Plaines River Road-Kennedy Expressway interchange, between the expressway and the Northwest Tollway. Station work will require removing the two ramps which currently provide access between the westbound lanes of the expressway and northbound lanes of Des Plaines River Road. In order to accommodate traffic from the eliminated ramps, modifications will be made to the ramps between the westbound expressway and southbound River Road, and a signalized intersection will be created.

Approxiamtely two-thirds of the traffic accessing the Park-n-Ride will originate in areas near the station, with 90% of this total coming from north of the complex. All of these cars will use Des Plaines River Road to reach the parking facility. The remaining one-third will have origins west of the station area and will reach it from the eastbound lanes of the Kennedy via northbound Des Plaines River Road. Traffic volumes and a schematic representation of the ramp modifications are presented in Figure V-6.

During the morning and evening peak hours, approximately 215 cars per hour will be added to Des Plaines River Road south of the Park-n-Ride and 330 will be added to the segment north of the facility. Current traffic estimates indicate that intersections in the vicinity of the Park-n-Ride will operate at or below their capacities during peak periods and will be susceptible to congestion from bad weather, holiday traffic, or other unusual or seasonal conditions. During the heavier p.m. peak hours, the Des Plaines River Road-Park-n-Ride Expressway intersection will also carry traffic from a shopping development planned for an area north of the station site. Heavier than normal traffic to and from the development could result in more frequent congestion and delay at this intersection. This could occur at holiday periods when shopping activity is greater than normal. It should be noted that any reduction in levels of service at intersections near the station site that may occur relate more clearly to the proposed shopping and office development traffic than to traffic generated by the proposed station complex.



Rosemont Station Site
Local Traffic

Figure V-6

The reconstruction of the Des Plaines River Road-Kennedy Expressway interchange will result in the loss of two ramps in the interchanges northeast quadrant, one entrance ramp and one exit ramp. Although expressway access and egress facilities will be eliminated, the traffic movements presently provided for by these ramps will be transferred to ramps in the northwest quadrant. As a result, all interchange movements presently provided for will be available with the new interchange design. The capacity of the new design and its associated signalized intersection will be large enough to accommodate the projected traffic volumes.

The Rosemont station and Park-n-Ride are located in an area that is well removed from residential development. In addition, on-street parking is not available on nearby segments of Des Plaines River Road in the vicinity of the station. As a result, neither neighborhood disruption nor traffic congestion will occur from CTA patrons attempting to park in areas close to the Park-n-Ride.

4. CBD Traffic

Vehicular traffic volumes in the CBD are not expected to change substantially due to the O'Hare Extension. The Extension will absorb much of the traffic increase expected in the Kennedy Corridor, both airport and commuter oriented, but will not result in an overall reduction in vehicular trips originating in or destined for the CBD.

In 1985, the O'Hare Extension segment of the CTA rapid transit system will have the capacity to absorb a larger share of CBD trips over time. The O'Hare Extension with its associated Park-n-Ride structures would be an integral part of any future plan to reduce vehicle volumes in the CBD, as it will provide a viable alternative to the automobile, taxi, and airport bus for the transportation of people in and around the Kennedy Corridor from O'Hare Airport to the CBD.

G. LAND USE

The primary land use changes as a result of the project will occur within the median of the Kennedy expressway. The median will accommodate three transit stations, three passenger platforms, storage facilities, and the extension trackage. In addition, three park-n-ride facilities will be constructed wholely on expressway right-of-way adjacent to the Harlem Avenue, Cumberland Avenue, and Rosemont stations.

The proposed rapid transit extension will have no direct effect upon existing uses of land within the project study area other than the affected expressway right-of-way. The extension will, however, have the secondary effect of increasing the development potential of both vacant and underutilized land located in close proximity to the proposed transit stations.

Land use impacts near the Harlem Avenue station will be minimal due to the extent of existing development in the area. Greater development potential exists in areas surrounding the Cumberland Avenue and Rosemont stations where numerous large vacant sites currently exist.

The rapid transit extension to O'Hare will, in addition, have indirect impacts on development potential within the CBD and throughout the study area as a result of the expanded economic and social opportunities afforded by the project.

1. Local Impact

The Comprehensive Plan of Chicago suggests that areas in the outlying sections of the city close to transit and commuter stops, or to expressway access points, be developed gradually with housing of higher density than that of the surrounding area. With a general adherance to this plan concept, existing and proposed development along the expressway would be highly serviced by the rapid transit extension.

The area immediately surrounding the proposed Harlem Avenue station is currently developed with moderate density residential uses. Due to the extent of existing development in the area, increased residential development in the vicinity of the Harlem Avenue station is expected to be minimal.

The area surrounding the proposed Cumberland Avenue station exhibits the greatest potential for new residential development. Several high density projects have been constructed near the interchange within the past 15 years. The largest development in the area is located south of the expressway and is comprised of five 15 story buildings containing 1000 rental units. Adjacent to this complex are several smaller residential developments with lower densities.

The largest parcel of vacant land in the area is a tract located south of the expressway and west of Cumberland Avenue. Although current plans for a large percentage of the area call for office and commercial development, several acres of land would still be available for further residential development. Fast and efficient transit service would be provided to the greatest number of people with the continued construction of high density residential buildings in the area surrounding the proposed Cumberland Avenue station.

Major hotel concentrations are also located at Kennedy Expressway interchanges at Cumberland Avenue and Rosemont. Direct transit access from the airport to stations at both interchanges will greatly enhance the hotel and convention market in the O'Hare area.

The Hyatt Regency O'Hare located southeast of the expressway-Des Plaines River Road interchange recently embarked on an expansion program which will, when completed, add 400 new rooms and 10,000 square feet of meeting space to the existing facility. The O'Hare International Trade and Exposition Center located directly south of the hotel is the largest convention facility in the country next to a major airport.

The greatest potential for continued commercial and office development in the Kennedy corridor also exists at the Cumberland Avenue and Rosemont interchanges. Several developments are currently being planned for large parcels of vacant land which surround the Cumberland Avenue interchange. An eight story office building with an adjacent parking structure has been proposed for a site south of Higgins Avenue between the Marriott hotel and the O'Hare Plaza bank. The same developer is also considering the development of a lower rise office structure north of Higgins in suburban Park Ridge. Several developments have also been proposed for a site southwest of the interchange. Two major proposals for the site are the Shriner National Headquarters building and a commercial development.

A multi-story enclosed shopping mall has been proposed for a 15½ acre site north of the Kennedy Expressway/Des Plaines River Road interchange in suburban Rosemont. Located at the southeast corner of Des Plaines River Road and Higgins Avenue, the mall will eventually contain two major retail outlets and several smaller stores.

Due to the location of the proposed project within the median of a high capacity urban expressway, contact with and effect upon recreational land uses will be minimal. The only significant recreational area through which the highway and rapid transit corridor passes is a section of the Cook County Forest Preserve. Portions of the Forest Preserve were granted as a perpetual easement for highway right-of-way in 1956 and 1958. These adjacent easements combine to vary in width from approximately 300 feet at East River Road and the Kennedy Expressway to approximately 1200 feet just west of the Des Plaines River. Within this area, which is approximately ½ mile in length, is the junction of the Northwest Tollway and the Kennedy Expressway. One of the most significant effects of the proposed extension in this area will be one of increased accessibility to the Forest Preserve facilities. The proposed station and park-n-ride at Des Plaines River Road in Rosemont is less than ½ mile from the Preserve and will provide significantly improved access to nearby facilities for public transportation users.

2. Regional Impact

As air traffic increases at O'Hare, developers will continue to capitalize on the commercial power of the world's busiest airport which has stimulated the growth of retail trade, industry, hotel and convention facilities, office space, and residential developments in northwest Chicago and surrounding suburbs. Increased accessibility to the O'Hare area via public transportation will attract persons from other areas of the city, thereby adding to the area's economic activity.

The proposed rapid transit extension will strengthen the position of Chicago's Central Area as the heart of the region. Direct access to O'Hare Airport via the Kennedy rapid transit line will have positive impacts on existing land uses and development potential with the Central Area and will further strengthen the Central Area's position as the transportation hub of the region. Existing hotel and convention facilities within the Central Area will also benefit from more direct accessibility to the airport.

H. AIR QUALITY

Air quality impacts associated with the proposed O'Hare CTA Extension may be grouped into two major categories: regional or macro-scale effects and local or micro-scale effects. In the former case, primary concern centers around the relationship of the proposal to air quality control plans for the Chicago area, while micro-scale analyses concentrate upon effects within the areas immediately adjacent to the project. Each is considered in detail below.

1. Regional Air Quality Effects

The regional air quality effects of a proposed transportation improvement may be interpreted in terms of the relationship of the proposed action to the area's air quality control plans and policies. The Chicago area has been designated an Air Quality Control Region by the US EPA, and as such, is subject to a Transportation Control Plan (TCP) which is intended to assure attainment and maintenance of the primary national ambient air quality standards.

Three specific air quality control strategies are defined in the TCP:

- prohibition of parking on one side of selected arterial streets in the Chicago CBD,
- implementation of a Cook County vehicle emission testing program,
- installation of a computerized traffic signal control system in the Chicago CBD.

These strategies are required in addition to the existing controls provided under the Federal Motor Vehicle Control Program and the City of Chicago Vehicle Emission Testing Program.

Extension of transit service to O'Hare Airport and implementation of a Park-n-Ride program for transit users constitutes a transportation control measure designed to modify commuters' mode choice decisions. Park-n-ride strategies were specifically considered by US EPA for incorporation into the TCP, although such action was not formally taken. The US EPA study, "Evaluation of Transportation Control Strategies for Chicago" (June 1974) indicated that park-n-rides constitute one of the more effective candidate strategies for reducing carbon monoxide emissions in the downtown Chicago Transportation Control Area (TCA). Based on the study's findings, the 2600-car capacity of the proposed facilities, alone, could result in a 1.5% decrease in TCA auto related emissions. Diversion of drivers to bus and kiss-n-ride access to the stations would only increase the beneficial effects, as would the diversion of airport passengers, employees, and visitors to transit usage.

2. Local Air Quality Considerations

Among the major air quality concerns in the local areas surrounding the project are effects due to Park-n-Ride activities, feeder bus routes, and other changes in traffic volumes and/or patterns. Since these effects are mostly concentrated and predictable in the vicinity of the proposed stations, an air quality analysis of each of the station locations was carried out.

The methodologies used in the analyses were drawn from the FHWA Air Quality Manual (April 1972), the Illinois Department of Transportation Air Quality Manual (Revised December 1976), the US EPA Mobile Source Emission Factors Interim Document (June 1977), and the US HEW Workbook of Atmospheric Dispersion Estimates by D. Bruce Turner (Revised 1970). Application of the procedures and data contained in these documents permitted the calculation of non-reactive air pollutant emissions (carbon monoxide) from motor vehicles traveling on roadways near the proposed Park-n-Ride facilities. Air quality at selected sites was then calculated based upon dispersion of the pollutants downwind in accordance with Gaussian diffusion equations. Carbon monoxide was selected as the pollutant best suited to study since it is a primary pollutant from motor vehicles; is relatively non-reactive; produces significant adverse health effects in exposed individuals; and is subject to stringent US EPA regulations. The other pollutants such as nitrogen oxides, sulfur oxides, hydrocarbons, and particulate materials are far less amenable to mathematical forecasting techniques.

Completion of the air quality analyses required that case study conditions be established for analysis time frame, traffic conditions, meteorology, and receptor sites. In this study, "worst case" conditions for each of these areas were selected in order to provide both a conservative result and to permit comparison of analysis results with the US EPA ambient air quality standards.

Three specific years were selected for analysis - 1977, 1981 and 1985. Conditions in the year 1977 were considered to represent the existing situation and provide a baseline against which future actions may be compared. The year 1981 represents the earliest date on which the system could be operational, while 1985 represents a design year by which time full operational status should be achieved. In each of the analysis years, the worst case time frame used was an 8 hour interval. This period was selected to correspond to the most stringent US EPA air quality standard for carbon monoxide, i.e. 9 parts per million averaged over 8 hours. It is this standard which has often been violated in the Chicago Air Quality Control Region. A total of 63 such violations occurred in 1977.

Traffic conditions for a worst case are based upon an hourly average of the 2nd highest 8-hour total traffic volume which includes the PM peak period. The PM peak was used since the greatest potential for pollution at the sites exists when vehicles are starting up and leaving the Park-n-Ride. Speeds for traffic were assigned on the basis of a weighted average over the 8-hour period. Included in traffic considerations were volume and pattern changes due to park-n-ride and kiss-n-ride activities and provision for feeder bus service. Traffic under both the build and no-build conditions are used for comparison of relative impacts.

Worst case meteorology includes factors such as wind speed, atmospheric stability,and wind direction. For this study, a wind speed of 1 meter per second (about 2 MPH) was used since it is the lowest speed which can be considered by the available pollution prediction techniques. A stable, urban atmospheric condition, Class D, was utilized in accordance with directives from the Illinois Department of Transportation. Wind direction was manipulated so as to result in the greatest pollutant concentration at a selected receptor site.

Receptor sites selected for analysis represent the closest locations to the proposed station areas where non-employment-related human activity could reasonably be expected to occur during the 8-hour peak traffic period. Such sites could include private residences, hotels, hospitals, schools, recreational facilities, etc. The receptor sites selected for study include:

Harlem Avenue Station - A multi-story apartment building on Higgins Avenue directly south of the proposed Park-n-Ride structure.

Cumberland Avenue Station - A hotel located on Cumberland Avenue at its intersection with Bryn Mawr Avenue and lying adjacent to the southeast quadrant of the Cumberland-Kennedy interchange.

Rosemont Station - A hotel located on Des Plaines River Road adjacent to the southeast quadrant of the River Road-Kennedy interchange.

The results of the local air quality analysis are presented in Table V-6. In all cases, implementation of the proposed project will result in some deterioration of the air quality in the immediate vicinity of the park-n-ride facilities compared to the no-build case. Both the Cumberland and Rosemont station complexes are clearly able to meet the US EPA ambient air quality standards when the open in 1981. In the case of the Harlem Avenue park-n-ride facility, air quality predictions indicate the potential for CO levels to exceed the ambient air quality levels in 1981. However, meteorological analyses indicate that ambient conditions for such episodes are unlikely to occur more than once per year. The US EPA standards permit one such excursion. By 1985, the maximum expected CO level at the Harlem Avenue site will be within air quality standards. Also, the projected 1981 level is below the level calculated for 1977 conditions.

There are some special air quality issues which need to be addressed in addition to the local effects considered above. Use of the Kennedy Expressway median for the proposed rapid transit route will result in the exposure of both rapid transit users and CTA employees to air pollution generated by expressway traffic. For passengers, the greatest exposure will occur during peak hours of travel. Employees will be exposed throughout their daily duty periods. Appropriate air quality analysis time periods have, therefore, been set a 1 hour and 8 hours for passengers and employees respectively. Finally, the Harlem Avenue and Cumberland Avenue park-n-rides are multi-deck structures for which internal levels of vehicular emissions are of concern regarding motorists using the facilities. Estimated air quality levels for the station platform areas and the park-n-ride interiors are given below:

		CO LEVELS IN PPM	
		1981	1985
CTA Station Platform	(1-hour)	25	16
	(8-hour)	10	6
Harlem Park-n-Ride Interior	(1-hour)	12	10
Cumberland Park-n-Ride Interior	(1-hour	31	28

Comparison of these levels to appropriate US EPA and OSHA criteria indicates no violations are expected to result from implementation of the proposed improvement. Nonetheless, investigation will be undertaken during final design to determine if mechanical ventilation in the park-n-ride facility is required.

TABLE V-6

AIR QUALITY ANALYSIS RESULTS AT INTERMEDIATE STATION LOCATIONS

			8-HOUR AVERAGE AMBIENT CARBON MONOXIDE LEVELS IN PPM							
			1977	1981			1985			
STATION	PARK-N-RIDE CAPACITY	RECEPTOR DISTANCE		BUILD*	NO-BUILD	GARAGE CONTRIBUTION	BUILD*	NO-BUILD	GARAGE CONTRIBUTION	ANNUAL FREQUENCY OF OCCURRENCY
Harlem	685	100 ft.	13.0	12.1	8.1	4.2	8.9	5.3	3.5	1
Cumberland	850	400 ft.		7.8	5.6	2.1	5.4	3.6	1.8	5
Rosemont	800	700 ft.		5.8	5.3	0.8	4.7	4.2	0.7	5

* INCLUDES GARAGE CONTRIBUTION.

US EPA

NATIONAL AMBIENT AIR QUALITY STANDARDS

FOR CARBON MONOXIDE

(Not to be Exceeded More Than Once Per Year)

PRIMARY STANDARD	SECONDARY STANDARD
10 mg/m^3 (8 hr.)	10 mg/m^3 (8 hr.)
9ppm	9ppm
40 mg/m^3 (1 hr.)	40 mg/m^3 (1 hr.)
35ppm	35ppm

mg/m^3 = micrograms per cubic meter

ppm = parts per million

OSHA

PERMISSIBLE LEVEL FOR CARBON MONOXIDE

50 ppm (8hr.)

3. Health Effects

Experimental exposure of healthy adults to low levels (1 ppm - 25 ppm) of CO evokes an increased blood flow to certain vital organs (heart, lungs, brain) to compensate for the reduced oxygen carrying capacity of the blood. This compensatory mechanism may be hindered in patients ill with severe heart disease; however, it is unlikely that persons with heart disease of this severity would be subjected to long periods of exposure to levels indicated in the table.

By 1985, CO levels are projected to be well within EPA standards, and therefore no long term health effects are expected.

I. NOISE

1. Impact on Rapid Transit Users

a. Intermediate Station Noise

In order to estimate the noise impact on Kennedy Extension patrons, noise at the proposed intermediate stations was compared with existing noise levels at stations on the Milwaukee line.

An assessment of CTA rapid transit noise was conducted in 1975 under an UMTA grant in which the noise at a number of station platform sites was measured.* Included in this study was the Irving Park station on the Milwaukee line which is representative of the three intermediate stations on the Extension. These stations share the characteristics of being located in the Kennedy Expressway median, having welded rail, and having platform between tracks.

The situations measured in the Noise Assessment are shown in Table V-7. The noise levels recorded are for two car trains of both the 2000 series and the 6000 series transit cars. Although two car trains operate only at night and on weekends on this line, the Assessment indicates that train length is an important noise consideration only for trains in tunnel. Thus, this data can be considered representative of the noise to which transit users will be exposed for all train lengths on non-tunnel segments of the Extension. The transit noise goals of the American Public Transit Association (APTA) are shown on the Table for comparative purposes.

TABLE V-7

NOISE AT IRVING PARK CTA STATION **

TRAIN CONDITION	AVERAGE MAXIMUM dB(A)	MAXIMUM dB(A)	APTA GOALS dB(A)
Entering	80	80	75-80
Door Opening	-	-	None
Stationary	76	76	68
Door Close	-	-	None
Departing	82	82	75-80
Pass Through	89	92	N/A
Station Ambient	81	81	None

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*Bachus, R., R. Priemer, and M. Silver. Noise Assessment of the Chicago Transit Authority Rail Rapid Transit System. UMTA - IL - 11 - 0007-2. 1975

**The Irving Park Station platform centerline is 11 feet-7 inches from the transit track centerline and 31 feet-7 inches from the centerline of the nearest expressway lane.

As can be seen, existing train operations meet or exceed the APTA goals except for the stationary train condition. It should be noted that this measurement category is meant to reflect the noise created by the operation of the transit cars' auxilliary equipment. At the Irving Park station location, this measurement actually indicates noise from Kennedy Expressway traffic, as shielded by the transit cars, which masks the noise of the auxilliary equipment.

Expressway noise affects overall noise levels at platform locations. During peak hours when the O'Hare Extension intermediate stations are most heavily used, expressway traffic will generate considerable noise. The proximity of station platforms to expressway roadways allows little dissipation of traffic generated noise which, in turn, results in noise from passing trucks generating noise levels often in excess of noise generated by train operations.

The platform noise at the Harlem, Cumberland, and Rosemont intermediate stations on the Extension will be very similar to that indicated in the Table above with three exceptions. First, if any station on the Extension is designated an "A/B" stop, all trains will serve the station and no pass through noise will occur. Similarly, during night and weekend operations, all trains serve all stops on the line, thus eliminating pass through noise. Third, the Assessment measurement of station ambient noise is for off-peak hours. A separate study of Kennedy Expressway traffic along the Milwaukee Transit line shows that this measurement varies rather markedly depending on Expressway traffic conditions. The L_{50}, or noise level exceeded 50% of the time, was 82dB(A) at 3:00 p.m. and 78dB(A) at 5:00 p.m.; and the L_{10}, or noise level exceeded 10% of the time, was 86dB(A) and 81dB(A) at these respective times. During periods of light traffic, expressway noise can be up to 10dB(A) lower.

b. Airport Station Noise

The Noise Assessment study also gives data from the Belmont station on the Milwaukee line, which is similar to the Extension's airport terminal station in design. Both of these stations are in-tunnel, have bi-level station configurations, welded rail track, and between track platforms. Table V-8 gives Belmont Station data.

TABLE V-8

NOISE AT BELMONT CTA STATION

TRAIN CONDITION	AVERAGE MAXIMUM* dB(A)	MAXIMUM** dB(A)	APTA GOAL dB(A)
Entering	82	86	80-85
Door Opening	71	75	None
Stationary	62	66	68
Door Closing	68	72	None
Departing	79	84	80-85
Station Ambient	53	58	55

*The Belmont Station platform centerline is 13 feet-7 inches from the transit track centerline

**2-car trains, 2200 series and 6000 series cars

The table indicates that current CTA operations at the Belmont station meet or exceed the APTA goals for the train conditions listed. In this case, Pass-Through noise is not included because the airport terminal station will be a stub end station where tracks dead end and trains reverse direction for the trip from the airport.

Noise levels at the airport station are expected to be similar to those at the Belmont station when two car trains are operating. At other times, as was indicated earlier, noise in subway stations increases with train length. To supplement the Noise Assessment measurements of 2-car train noise, the City of Chicago, Department of Public Works (DPW) undertook a smaller scale train noise study. The noise resulting from the arrival and departure of eleven six-car trains was measured. The results for cars of both the 2000 and 6000 series cars at the Belmont Station are as follows:

TRAIN CONDITION	AVERAGE MAXIMUM dB(A)	MAXIMUM dB(A)	APTA GOAL dB(A)
Entering	90	92	80-85
Departing	86	87	80-85

(The centerline of the Belmont Station platform is 13 feet-7 inches from the track centerline.)

The noise resulting from operation of 6-car trains presently exceeds the APTA goal for noise in subway stations. Three measures are being implemented to control noise at the O'Hare terminal subway station.

A. Resilient track fastening will be employed to reduce structure-borne vibration due to wheel-rail interactions.

B. A permanent speed restriction of 25 MPH will be enforced in the station and tunnel as a safety and noise control measure. High subway noise levels are associated with high speed train operation. Operation at speeds below 25 MPH will result in drastically lower noise levels.

C. A noise control consultant, Wilson-Ihrig and Asso., is being retained to develop specifications for sound absorbing materials usage in the station proper.

c. In-Car Noise

Passengers will also be exposed to noise during rapid transit trips. In order to quantify this effect, primary data from the Noise Assessment were used. As part of the Assessment, in-car noise levels generated on a trip from the CBD, Jackson Boulevard Station, to the Jefferson Park terminal of the Milwaukee Transit Line were recorded and analyzed. From this data, the durations of exposure to various noise levels were calulated. Noise exposure projections for the O'Hare Extension were derived from observed noise levels on comparable segments of the existing line by a ratio method. The projected exposure durations for the new transit segment were then combined with those observed on the Milwaukee Line of the West-Northwest route to yield a noise profile for a rapid transit trip between the CBD and O'Hare Airport. The results are summarized in Table V-9.

TABLE V-9

IN-CAR TRANSIT NOISE

NOISE LEVEL IN dB(A)	DURATION OF EXPOSURE CBD-JEFFERSON PARK	PROJECTED DURATION OF EXPOSURE CBD-O'HARE AIRPORT
80+	8 min. 37 sec.	14 min. 36 sec.
85+	3 min. 44 sec.	5 min. 06 sec.
90+	1 min. 01 sec.	1 min. 12 sec.
95+	0 min. 00 sec.	0 min. 00 sec.

2. Impact on Rapid Transit Employees

Motormen and conductors operating trains on the entire West-Northwest Rapid Transit Route, of which the O'Hare Extension will be a part, will be subjected to longer durations of noise exposure than will passengers. These personnel make a maximum of eight trips over the length of the West-Northwest route per day.

To quantify this effect, data from the Noise Assessment were again used. In-car noise measurements made over the entire route were used to calculate existing daily noise exposure durations. Projections of in-car noise generated on the O'Hare Extension were derived in the same manner as described earlier in this discussion.

The existing and projected noise exposure durations are compared to standards set by the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor, and presented below, in Table V-10.

TABLE V-10

EMPLOYEE NOISE EXPOSURE

NOISE LEVEL IN dB(A)	MAXIMUM EXISTING EXPOSURE TIME IN HOURS PER DAY	MAXIMUM PROJECTED EXPOSURE TIME IN HOURS PER DAY	OSHA NOISE EXPOSURES* STANDARDS IN HOURS PER DAY
80+	2.40	3.20	-
85+	1.20	1.40	-
90+	0.40	0.43	8
92+	0.27	0.29	6
95+	0.00	0.00	4

*Under Part 1910.95 "Occupational Noise Exposure," (Department of Labor) of the Code of Federal Regulations, Chap. XVII of Title 29 (39 F.R. 7006). Ref: Federal Register, Vol. 36 No. 105, May 29, 1971.

3. Impact on Areas Adjacent to the Expressway/Transit Corridor

a. Wayside Community Noise

To provide a basis for evaluating the noise impact of the O'Hare Extension, the expected wayside noise levels have been determined. The information used to estimate the expected noise levels includes noise data obtained at the BART (Bay Area Rapid Transit) Test Track and noise data obtained from measurements of CTA rapid transit operation in the Kennedy Expressway median. The following Figure shows the expected maximum pass-by noise levels from operation of a two-car train at average operating speed, 35 MPH.

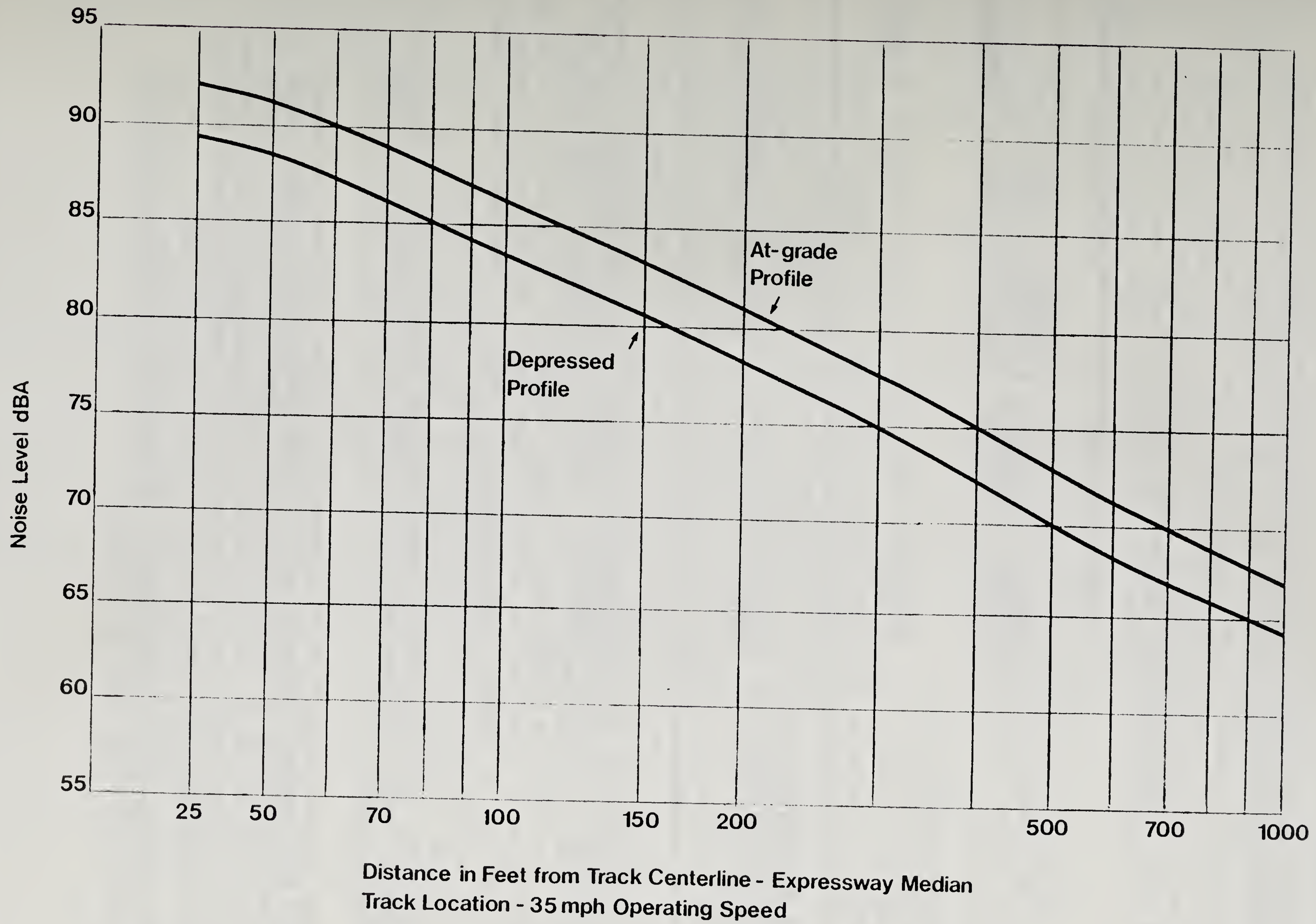
Noise generated by transit operation will be compared to the appropriate APTA goals. These goals apply to nighttime operation because the sensitivity to noise is greater at night than during the daytime hours. As has been stated before, the CTA operates 2-car trains during the night on this line. (It should be noted that the 2-car noise levels will approximate noise levels from longer cars as well. In the previously cited Noise Assessment conducted by the University of Illinois, train length was not found to be a significant variable in transit car noise generation as long as speed remained constant and trains were not operating in tunnel.) The APTA goals appear in Table V-11.

TABLE V-11

APTA GOALS FOR MAXIMUM AIRBORNE NOISE FROM TRAIN OPERATIONS

		SINGLE EVENT MAXIMUM NOISE LEVEL DESIGN GOAL		
COMMUNITY AREA CATEGORY		SINGLE FAMILY DWELLINGS	MULTI-FAMILY DWELLINGS	COMMERCIAL BUILDINGS
I	Low Density Residential	70 dB(A)	75 dB(A)	80 dB(A)
II	Average Residential	75	75	80
III	High Density Residential	75	80	85
IV	Commercial	80	80	85
V	Industrial/Highway	80	85	85

Land use and ambient noise level information indicate that APTA Land Use Categories II and V are appropriate for this study. The area under the Category V includes an 800 foot wide corridor with the transit tracks as



CTA Train Noise

Figure V-7

its center line. The area under Category II is that part of a 2000 foot wide corridor, again with the transit tracks as the centerline, not included in Category V.

In the following table the relationship between CTA transit car noise and appropriate APTA Maximum Airborne Noise Goals are shown.

TABLE V-12

MAXIMUM AIRBORNE NOISE FROM TRAIN OPERATIONS

	TRANSIT CAR NOISE		APTA CRITERIA		
	AT GRADE PROFILE	DEPRESSED PROFILE	SINGLE FAMILY DWELLING	MULTI FAMILY DWELLING	COMMERCIAL
Land Use Category II Average Residential at 400' from transit tracks	75 dB(A)	72 dB(A)	75 dB(A)	75 dB(A)	80 dB(A)
Land Use Category V* Industrial/Highway at 150' from transit tracks	84dB(A)	81 dB(A)	80 dB(A)	85 dB(A)	85 dB(A)

As is evident, the APTA goals are not exceeded in Land Use Category II, Average Residential. In Land Use Category V, Industrial/Highway, the single family dwelling goals are exceeded for both transit line profiles. Since no single family dwellings are located near at-grade segments of the transit line, no such dwellings will lie within the 84 dB(A) impact zone. The APTA single family dwelling goal is expected to be exceeded by 1 dB(A) in developed areas closest to the transit line, which are at least 150 feet from the transit tracks.

Noise from transit operation is expected to be generally lower in the vicinity of rapid transit stations than that for other wayside areas due to lower operating speed.

As was the case with noise on intermediate station platforms, expressway noise will have a significant effect on the perception of transit noise in the wayside community. During peak hours, expressway noise will mask much of the noise generated by train operations. During off-peak hours, expressway traffic will be lower, but train operations will generate noise no greater than that generated by large trucks passing on the expressway.

*APTA definitions allow residential and commercial land uses within the Industrial/Highway Land Use Category.

b. Park-n-Ride and Yard Related Noise

Use of Park-n-ride facilities will produce increased traffic noise during the morning and evening peak traffic hours in areas proximate to the three intermediate stations. This impact will not be significant at either the Cumberland or Rosemont stations, since park-n-ride structures at these stations are located well away, 600 and 1000 feet respectively, from residences, hotels, parks or other areas where noise sensitive activities take place. At Harlem Avenue, the noise impact from park-n-ride use will be noticeable, but will occur at times of the day when other transportation related noise levels will be at a maximum and will impact areas which are presently exposed to high levels of traffic noise from the Kennedy Expressway.

Operations at the Rosemont Yard will add to noise levels in the area. This effect will be comparable to the effect created by train operations in station areas. The effect is not expected to create a significant impact due to the yard's distance from noise sensitive sites.

c. Feeder Bus Noise

Noise increases will occur along streets which will be served by feeder buses that are not so served at present. The streets along which bus service will be provided will all be major thoroughfares, Primary or Secondary Arterial Highways. Arterials presently designated as bus routes may experience an increase in bus traffic, and some streets not so designated will be. In either case, given the volumes of traffic normally using Primary and Secondary Arterials, the increased bus traffic is not expected to have a serious noise impact. The following exhibit, Figure V-8, shows the changes in total daily bus movement on arterials in the feeder bus service area. The noise impact of bus operation will decrease over time. The City of Chicago has a noise ordinance that controls the sale of new vehicles. The heavy vehicle category applying to buses allows 84 dB(A) as of January, 1975, with a reduction to 75 dB(A) by January, 1980.

4. Health Effects

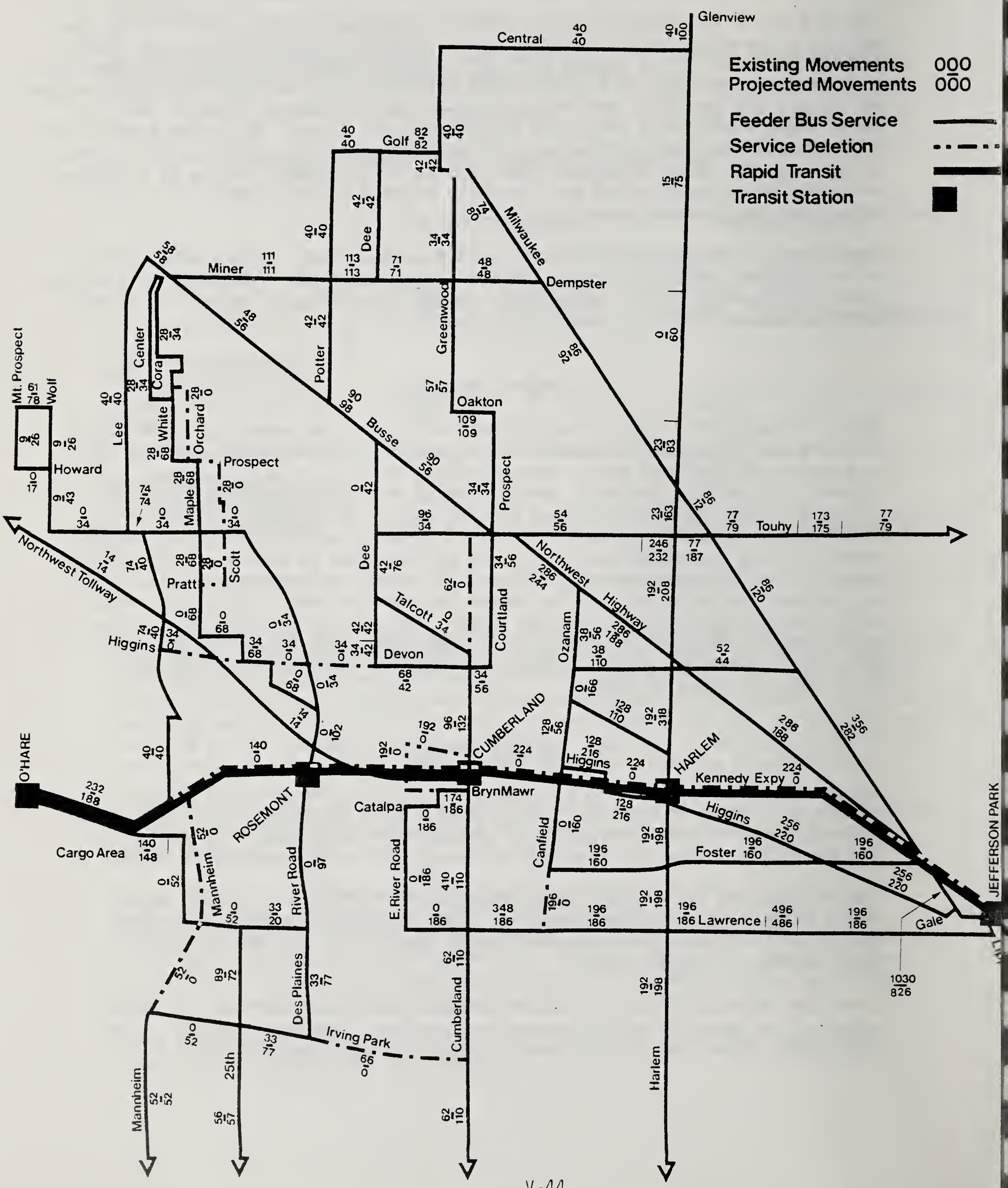
Daytime transit noise levels will have little or no impact on residential receptors. The transit tracks are located within the median of a high volume expressway and within a relatively high aircraft noise zone. Other daytime transportation noises are expected to essentially mask the transit noise.

Transit noise is more likely to be problematic in the late evening hours, during times of quiet recreational or sleep periods. The APTA goals are specified for nighttime operations due to sensitivity to transportation noise during nighttime hours.

Given the transient nature of train noise and the short duration of noise exposure, no negative health impacts are expected, although transit noise could be at times intrusive in areas closest to the transit line.

Figure V-8

Daily Bus Movements



J. ENERGY CONSUMPTION

Efficient use of scarce energy resources is a prime concern in contemporary transportation planning. Over 25% of all energy consumption in the U.S. is related to transportation activities, with the automobile accounting for over one-half of transportation energy use and 55% of the total demand for scarce petroleum based fuels. As is demonstrated below, the implementation of the proposed Kennedy Rapid Transit Extension will result in a reduction in both total trip-related energy consumption and total trip-related consumption of petroleum based fuels in the Kennedy Expressway corridor.

The energy intensiveness of a transportation mode may be described in terms of the passenger-miles traveled for a given expenditure of energy as expressed in British Thermal Units (BTU). Three major modes are identifiable in the project corridor: auto, bus, and rapid transit. For the purpose of this analysis, a 1985 passenger-mile/BTU ratio has been calculated for each mode based upon annual average performance within the corridor and projected average automobile fuel efficiency.

AUTOMOBILE*

$$\frac{18 \text{ Vehicle-Miles}}{1 \text{ Gal. Gasoline}} \times \frac{42 \text{ Gal. Gasoline}}{5.9\times10^{6} \text{ BTU (Crude Oil)}} \times \frac{1.4 \text{ Passenger-Miles}}{1 \text{ Vehicle-Mile}} = 179 \text{ Passenger-Miles}/10^{6} \text{ BTU}$$

BUS (O'HARE EXPRESS) **

$$\frac{4.33 \text{ Vehicle-Miles}}{1 \text{ Gal. Diesel Fuel}} \times \frac{38 \text{ Gal. Diesel Fuel}}{5.9\times10^{6} \text{ BTU (Crude Oil)}} \times \frac{16.8 \text{ Pass.-Miles}}{1 \text{ Vehicle-Mile}} = 468 \text{ Passenger-Miles}/10^{6} \text{ BTU}$$

RAPID TRANSIT (CTA SYSTEM-WIDE AVG.) **

$$\frac{1 \text{ Pass.-Mi.}}{0.234 \text{ DC KWH}} \times \frac{1 \text{ DC. KWH}}{1.1 \text{ AC KWH}} \times \frac{1 \text{ AC KWH}}{3410 \text{ BTU (elec.)}} \times \frac{1 \text{ BTU (elec)}}{3 \text{ BTU (therm.)}} = 380 \text{ Passenger-Miles}/10^{6} \text{ BTU}$$

*Derived from information provided by the American Public Transit Association and the Chicago Department of Public Works.

**Derived from information provided by the U.S. Department of Transportation, the Regional Transportation Authority and the Chicago Department of Public Works.

Expressing energy use in BTU allows comparison of the energy use of the auto and bus modes, which rely on energy from petroleum products, with the rapid transit mode, which relies on electric power generated from coal burning and/or nuclear energy.

To evaluate energy consumption changes due to implementation of the proposed transit extension, a comparison was made of the modal split patterns for trip types affected. Five categories of trip-makers were considered:

Airline passengers
Airport visitors
Airport employees
Park-n-Ride commuters
Other commuters.

Total annual energy consumption for each group was determined on the basis of the number and length of trips by auto, bus and rapid transit modes summed over 250 weekdays/year. Adjustments were incorporated for the transfer of trips between mass transportation modes such as commuter railroad, bus and the proposed rapid transit. A conservative result was assured by alowing for deadhead moves, sharp curves, owl and weekend service, and short station spacing in the rapid transit energy efficiency ratios. Similarly, exclusion of energy savings due to decreased expressway traffic congestion is a conservative feature.

The results of the analysis are as follows:

TABLE V-13

ANNUAL ENERGY SAVINGS BY TRIP GROUP

TRIP GROUP	1985 ANNUAL PASSENGER MILES AFFECTED (MILLIONS)	1985 ANNUAL ENERGY USE (10^{10} BTU) BUILD	NO-BUILD	1985 ANNUAL ENERGY SAVINGS (10^{10} BTU)
Airline Passengers	159.0	65.02	70.56	5.54
Airport Visitors	23.4	7.69	11.86	4.17
Airport Employees	48.7	12.81	24.11	11.30
Park-n-Ride Commuters	16.0	4.21	7.29	3.08
Other Commuters	8.6	2.27	4.82	2.55
TOTAL	255.7	92.00	118.64	26.64

Operation of the proposed rapid transit extension will require a total annual electrical energy commitment of $3.10\text{x}10^7$ kilowatt-hours, which is equivalent to $35\text{x}10^{10}$ BTU of thermal energy, considering losses during power generation and transmission. Expenditure of this non-critical resource based energy results in saving $61.64\text{x}10^{10}$ BTU of petroleum based energy annually. This is equivalent to the conservation of 104,500 barrels of crude oil each year.

It should be noted that the power needs of the O'Hare Extension can be satisfied without the construction of new electric power plants or the expansion of existing power plants.

In addition to the operational aspects of the project, energy will be required for system maintenance. Although no data is available to quantify the level of expenditure for this activity, it is not expected to constitute a significant impact upon regional energy consumption. In any case, maintenance is essential for the upkeep of the proposed transit extension, which in turn, is required tosatisfy existing and future needs for the movement of people in the Kennedy Corridor.

No alteration in the energy efficiency of O'Hare Airport itself, can be foreseen in connection with this project. Airline operations are expected to achieve the 30 million emplanement level in any case and overall airport-oriented ground travel will increase accordingly. The presence of the rapid transit line may, however, affect the pattern of urban development so that additional residential and business activities locate along the rapid transit corridor and around the airport complex. The economic and social benefits of such development will be accrued at the expense of the energy required to construct and support it.

K. SOCIAL EFFECTS

The Kennedy extension will have a number of social impacts, the most significant being accessibility of jobs, services, and institutions; safety and security; and the effects on the transit dependent and disadvantaged.

1. Accessibility to Jobs, Services, and Institutions

The proposed rapid transit extension will provide greater accessibility to job opportunities. Not only will the three intermediate stations provide needed accessibility between the O'Hare, Chicago Neighborhood, and Chicago Central subareas, but greatly improved access to jobs within the far northwest portion of the study area will be available from all sections of the metropolitan area.

Numerous and varied public and private human service facilities are located throughout the study area. The impact of the extension on accessibility to human services in the three subareas will be greatest on those residents in the area immediately east of the airport where, because of its recent development, such facilities are either few or nonexistent.

The proposed extension will promote increased patronage of the numberous educational and cultural facilities located in the Central Subarea. Educational institutions include Roosevelt University, the Loop YMCA College, and Loop branches of Loyola University, Depaul University, and the University of Chicago. There are also several technical schools and teachers colleges in the Central Subarea. The University of Illinois at Chicago Circle and a large medical complex comprising five major hospitals, three schools of medicine, nursing, and allied health sciences lie in the southwest portion of the Central Subarea. The Field Museum of Natural History, the Adler Planetarium and Astronomical Museum, the John C. Sheed Aquarium and the main branch of the Chicago Public Library also serve as educational facilities.

The cultural interests of Chicago area residents are served by the Civic Opera House, Orchestra Hall, and Auditorium Theatre. The Art Institute of Chicago and the Museum of Contemporary Art offer lectures, classes, films, and exhibits of painting and sculpture from around the world. The Goodman, Blackstone, Shubert, Civic, and First Chicago Center Theaters present a variety of first-run plays and popular returning productions. Extended public transit will provide easier access to these cultural facilities from the O'Hare Subarea and the Northwest Section of the Chicago Neighborhoods Subarea.

Use of the O'Hare Extension and its associated bus lines will provide improved access to the Cook County Forest Preserves in the northwest portion of the study area.

2. Safety and Security

Operational safety has been increased within the CTA rapid transit network by the installation of a fail-safe overspeed and train control system insuring safe train speed and separation of trains.

Safety and security in intermediate stations and at O'Hare Airport is expected to be very high and significantly greater than the CTA rapid transit systemwide average. A recent transit security study conducted for the CTA compiled crime/ridership indices* at CTA rapid transit stations as a measure of in-station safety and security. The crime/ridership index for stations on the newly constructed rapid transit segment which will lie adjacent to the O'Hare Extension, that is from Logan Square to Jefferson Park on the Milwaukee Line, is 0.5 crimes per 1,000,000 entering passengers. This compares with the CTA systemwide average of 7.2 crimes per 1,000,000 entries. The transit security study also indicated that transit crime rates are usually related to local non-transit crime rates.

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*The crime-ridership index measured robbery, battery, assault, and crimes against persons which include murder, manslaughter, rape, and indecent exposure.

Given that the Extension will be a continuation of a very low crime segment of the CTA transit system and that the Extension will pass through a low crime area, in-station crime on the O'Hare Extension can be expected to be very low. Additionally, since the Extension will not result in significant increase in crime at station sites, the crime rates in areas surrounding station sites can be expected to be unaffected by the transit project.

Safety and security in the Dearborn Street subway, the downtown segment of the Milwaukee Line, is presently high. The Dearborn Street subway, as with other subway stations within the Central Area, is heavily patroled by police during both rush hour and non-rush hour periods; and is as safe or safer than other stations in the Central Area - including those located on the Near-North-side. As referenced in the report - Improvement of Mass Transit Security in Chicago (1973), CBD stations on the Milwaukee line are among the safest within the entire rapid transit system.

The design of the proposed station complexes will provide transit users with a greater perception of safety and security through the use of sufficient lighting and the minimum use of center columns on all station platforms. Police emergency telephones will be installed on all new station platforms.

Current security practices throughout the CTA transit network include frequent station and/or on-vehicle patrols by Chicago Police Department district beat officer, Chicago Police Department's Mass Transit Unit, and CTA Security Division. New methods of transit security are currently being studied.

The proposed improvements are expected to have no adverse effect on access to Resurrection Hospital from O'Hare Airport via the eastbound expressway lanes. The designated exit from the Kennedy Expressway, and hence from O'Hare, to Resurrection Hospital is at Harlem Avenue. Exiting from the westbound expressway lanes, access to Harlem Avenue is made via Bryn Mawr Avenue, which will incur no change in peak hour traffic volumes due to the proposed park-n-ride at Harlem Avenue. Exiting from the eastbound lanes, the route from O'Hare Airport, ambulance and emergency vehicle traffic would access Harlem Avenue via Higgins Avenue. The exit movement from the eastbound expressway lanes to Higgins will be significantly improved by the proposed exit ramp modification. This modification will allow free flow movement off the expressway, avoiding the present stop-sign controlled, three way, expressway exit ramp - Higgins Avenue intersection. Movement through the Harlem-Higgins intersection will be somewhat improved after project completion due to addition of turn bays, channelization, and improved signalization.

3. Social Cohesiveness

Because the Kennedy Extension will be located in the expressway median, existing social patterns within the study area will not be disrupted. Although park-n-ride facilities in the Harlem Avenue, Cumberland Avenue, and Rosemont stations will have an influence on the immediate neighborhoods during peak hours, they will not change in any way the existing social patterns which developed as a result of the barrier previously created by the Kennedy Expressway.

4. Relocation and Displacement

Construction of the transit line within the median of the Kennedy Expressway will necessitate no residential or business displacement or relocation. The proposed extension will allow the communities located in the project area to retain their moderate-density character and wide housing mix and will promote high-density development at available locations near the mass transit corridor.

5. Transit Dependent and Disadvantaged

The transit dependent include not only those who do not have the physical abilities to operate an automobile but also those who cannot afford or choose not to have one. The proposed extension will provide increased accessibility to employment and human service organizations in all the subareas and in other areas served by the CTA rapid transit system.

The proposed rapid transit extension to O'Hare will be planned and designed to accommodate the needs of the handicapped and elderly. Walkways will be provided which can connect to elevators for access by the handicapped. Escalator service will be provided at all stations to reduce stair climbing to a minimum. Although no other CTA stations are presently equipped to accomodate the needs of the handicapped and elderly studies are being conducted to determine what improvements can be made at existing stations to better serve their needs.

L. ECONOMIC IMPACTS

1. Capital and Operating Costs

The capital cost of the O'Hare Extension will total approximately $136 million (1978 prices), including engineering and contingency costs. A breakdown of the major construction item costs is as follows:

Track	$ 12,897,914
Bridges	4,820,580
Track bed preparation	7,877,904
Tunnels	32,196,469
Train control & communications	9,790,255
Electrification	3,988,600
Harlem station & park-n-ride	11,277,051
Cumberland station & park-n-ride	10,582,607
Rosemont station & park-n-ride	8,312,642
Rosemont yard	4,272,430
O'Hare station	3,779,870
Substations	5,954,223
	$115,750,545
Engineering & contingencies	19,929,394
Construction Total	$135,679,939

The impact of inflation will affect the costs of the O'Hare Extension. Under the assumption that material and labor cost increases average 6% per year, the cost of the extension in dollars inflated to 1980 (the assumed midyear of construction), would be approximately $152,450,000.

The operation of the O'Hare Extension will create impacts on the operating cost, revenues, and operating deficits of both the CTA and suburban bus companies. These impacts are due to the extension of rapid transit service and the modification of bus routes to serve new rapid transit stations. The changes in costs and revenues and the resulting changes in operating deficits are presented in Table V-14.

TABLE V-14

Cost and Revenue Data (1977 dollars)

	Costs	Revenues	Operating Deficit
Feeder Bus Operations Current	$ 7,598,000	$ 3,562,000	$ 4,036,000
Projected	6,313,000	3,402,000	$ 2,911,000
Net change	- 1,285,000	- 160,000	- 1,125,000
Rail Operations Current (O'Hare Extension)	$ 0	$ 0	$ 0
Projected	9,080,000	4,840,000	4,240,000
Net change	+ 9,080,000	+ 4,840,000	+ 4,240,000
Total Current	$ 7,598,000	$ 3,562,000	$ 4,036,000
Projected	15,393,000	8,242,000	7,151,000
Net change	+ 7,795,000	+ 4,680,000	+ 3,115,000

In 1977 the system wide public funding requirement, i.e. deficit, for CTA operations was $127.4 million.

The transit cars required to operate the O'Hare Extension will be provided by the CTA. These cars will likely be a mix of the older 6000 series cars and new cars presently being procured by the CTA. The method in which cars will be supplied for O'Hare Extension operation has as yet not been fixed. One possible method is to use the new transit cars presently being procured by the CTA during non-peak operating hours and supplementing them with rehabilitated 6000 series transit cars to fill the peak-hour operating needs of the line. In any case, the transit cars required for operation of the O'Hare Extension will be supplied by the existing transit car stock of the CTA, as it exists at the time the O'Hare Extension opens.

2. Employment

The direct employment impacts associated with the O'Hare Extension project are attributable to construction work force requirements and additonal CTA personnel required to operate the West-Northwest Rapid Transit Line upon completion of the Extension.

As mentioned in the Construction section of this chapter, the number of construction employees involved in building the new section of line will be variable over the life of the project, with an estimated 1000 to 1200 fulltime positions created during peak construction. The economic impact of this project will be to add approximately $55 million to the region's wage base over the construction period.

The other direct employment impact of the Extension project will be long term, and involves the additional employees needed by the CTA for operation of the extended West-Northwest line. Current estimates are that an additional 88 people will be required for operation of the O'Hare Extension, including 13 motorman/conductor crews, 30 maintenance workers, 18 ticket agents, 9 switchmen and janitors. The annual wages paid to these workers will total approximately $1.83 million.

Indirect employment benefits may also result from the Extension project, as a function of increased accessibility of jobs in the O'Hare and Central areas, where employment opportunities are among the best in the region.

3. Land Values

Transit systems or extensions generally precipitate an increase in property values in areas through which they pass because of the heightened accessibility they afford. This is especially true of commercial and industrial property, while residential land values are more influenced by other factors.

Property values in the O'Hare area are currently among the highest in Cook County; and development has been extensive in recent years. Studies of real estate values in the vicinity of the Jefferson Park CTA terminal have indicated that a marked increase in property values occurred, possibly due to the transit service. Although construction of the O'Hare Extension is not expected to affect land values significantly, it could prompt the rezoning of some undeveloped residential areas particularly near station locations, which would increase the local tax base.

The overall effect of the Extension on land values in the Kennedy corridor is not expected to be great. Traditionally, the six transportation corridors radiating from the CBD have been the most intensively developed and economically active areas in the region. The Kennedy corridor follows this pattern, and with the CBD and O'Hare as its termini, contains some of the most valuable land in the SMSA. The Extension can be expected to reinforce current land values and general development patterns without causing major economic changes.

4. Fiscal Impacts on Carriers

The redistribution of travelers expected from improved public transit service in the Kennedy Expressway corridor will result in fiscal impacts on the carriers in the corridor.

The commuter rail companies in the corridor and the CTA are all under the jurisdiction of the Regional Transportation Authority. RTA's commitment to the rapid transit extension assures that neither of the commuter rail companies will suffer financial disbenefits from the ridership redistribution. Purchase of service agreements are currently in effect with both the C&NW and Milwaukee Road companies, whereby the RTA will set levels of transportation services in the corridor and provide operational subsidies to the railroads for public transportation operation.

Neither taxi companies nor Continental Air Transport, the private airport bus service, should expect decreased patronage as a result of the O'Hare Extension. By 1985, the total number of weekday person trips to the airport will increase from the 1976 level of 172,500 to 248,900. It is projected that patronage on the O'Hare Extension will not equal the difference between 1976 and 1985 person trips. As a result, the demand for highway access will be greater than at present. The share of the airport ground access ridership marked captured by taxi and airport bus is not expected to decrease.

Projections generated for air passengers' trips to O'Hare Airport indicate that in 1985 the Taxi and Limousine/Coach modes will carry 135% and 106% of their 1976 patronage, respectively.

M. AESTHETIC IMPACTS

Construction of the Extension will visually alter the Kennedy Expressway and airport access roadway medians and the proposed station complex sites with the addition of a number of new structures.

Along the expressway and airport access road, what is currently a grass median will be replaced by transit tracks and a concrete barrier wall. This will result in a less pleasing view, especially when trains are passing; however, the aesthetic changes within the medians are not inappropriate for their location.

The intermediate stations will also constitute a visual change in the Expressway median. Designs for the stations indicate a low profile configuration that will not be overly intruding. The removal of greenery in the median will, nonetheless, be a negative aesthetic impact. The fact that transit structures will be underground at the airport will result in no visual changes at this location.

The proposed Park-n-Ride structure at the Harlem Avenue site will be more visually intrusive than the other two facilities due to its location adjacent to residential areas. The areas near the Cumberland Park-n-Ride are either vacant or primarily of a business/commercial nature, and the visual impact of a parking structure will be less at this site. At Rosemont, the Park-n-Ride and storage and maintenance facilities will convert rather large areas of what is presently grass or roadway to transit related structures. The immediate visual impact of these structures will not be great due to the undeveloped nature of surrounding areas. The ultimate visual and aesthetic impact of the Cumberland and Rosemont facilities will depend upon the kind of development undertaken near them.

To mitigate the visual effects of the intermediate stations and parking facilities, low profile, modern designs and landscaping will be used.

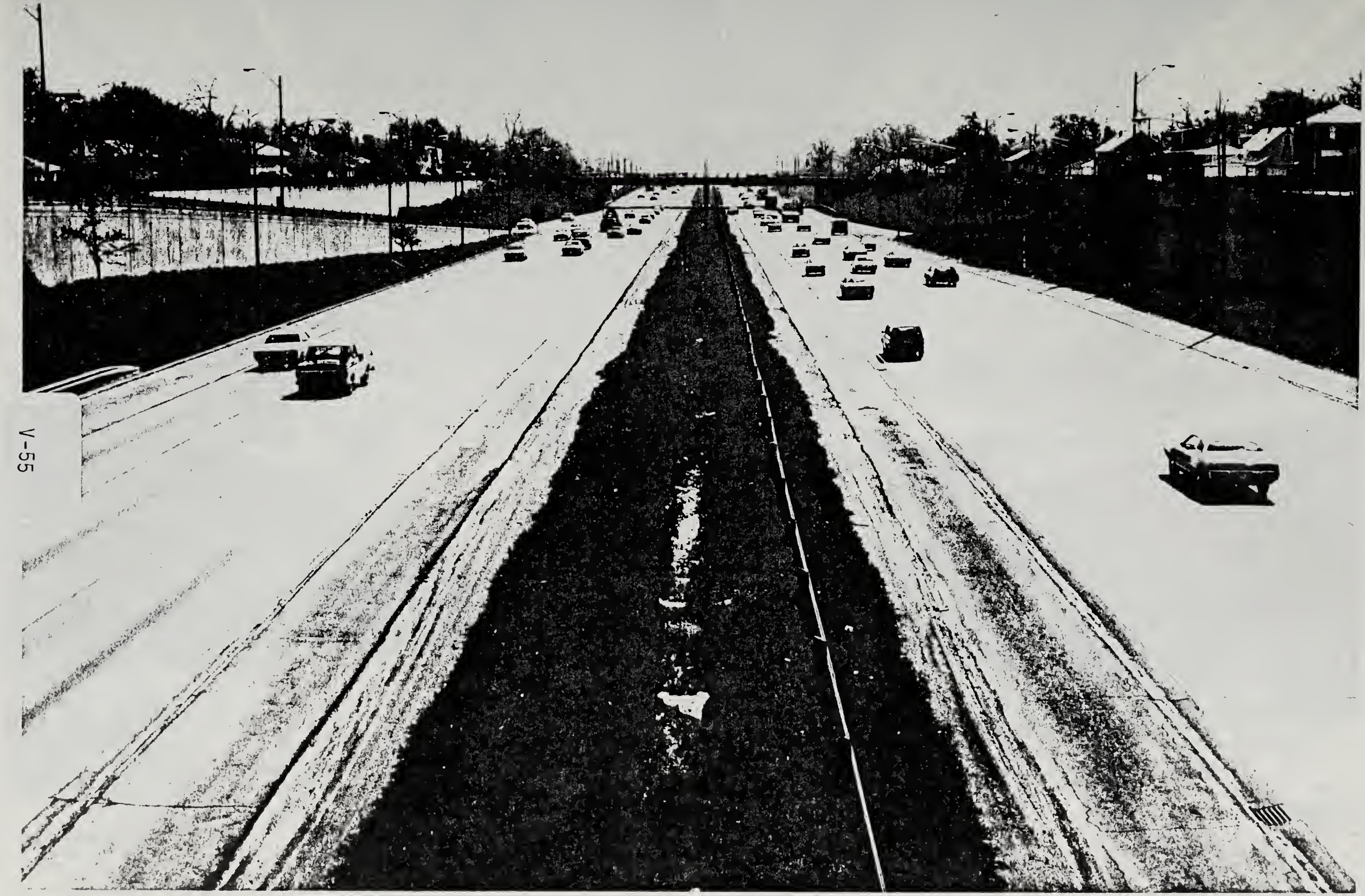
Aesthetic impacts will also occur in the Forest Preserve, but will be minimized by placing the transit tracks partially in tunnel and new bridge structures between existing roadway bridges, and by confining new structures to areas already used for transportation purposes.

Figures VII - 9 through V - 16 are schematic representations of the visual changes that will result from the construction of the O'Hare rapid transit extension.

N. AIRPORT PLANNING

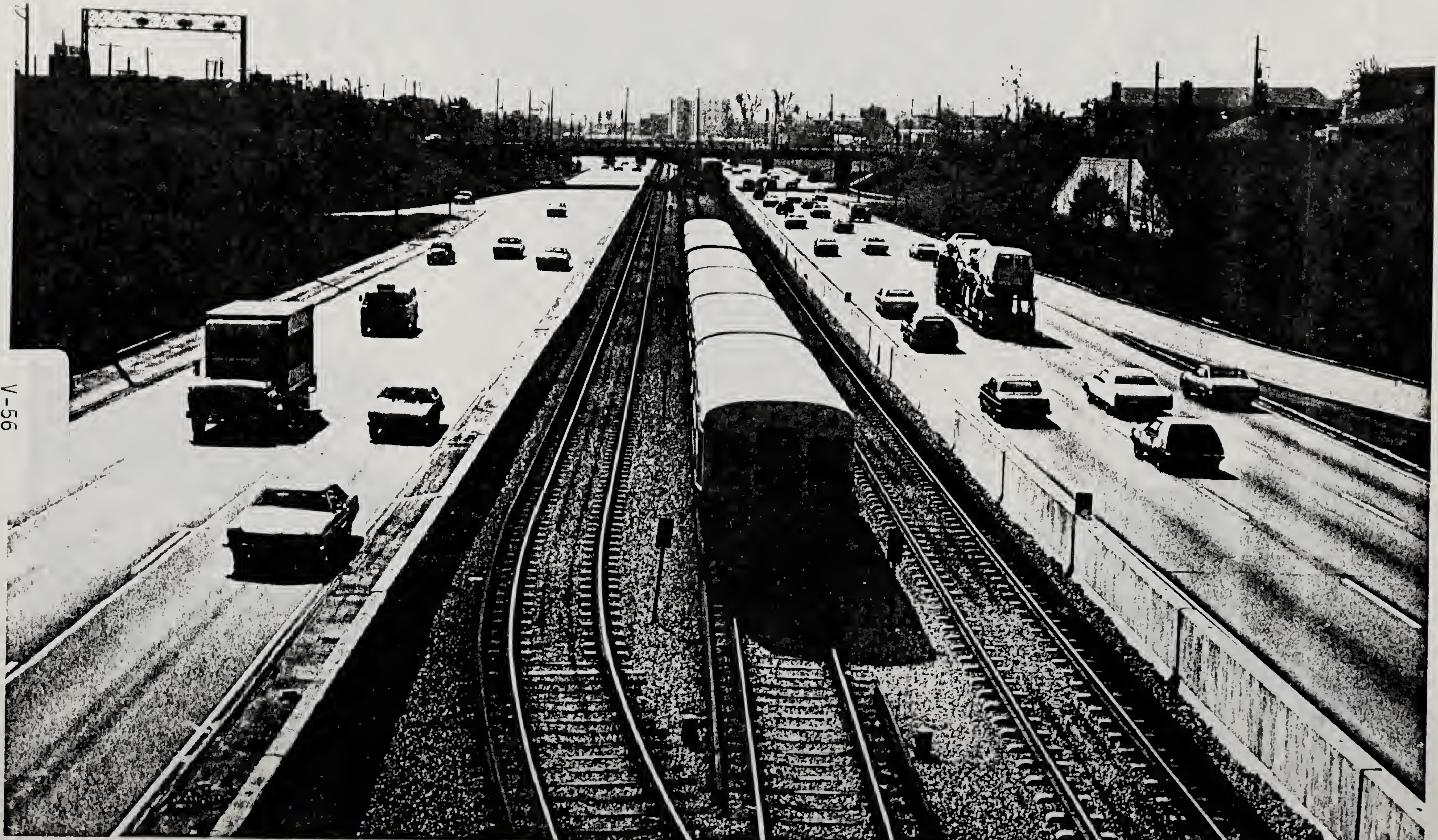
Although the Master Plan for O'Hare Airport is not yet complete, the extension of rapid transit to the airport is fully expected to be an element of the plan as finalized.

The O'Hare Extension will have no effect on the City's effort to divert some airline traffic to Midway Airport. Midway Airport is a potentially valuable asset to the region's transportation network; and efforts to revitalize the southwest side facility will continue regardless of increased accessibility to O'Hare provided by the extension. The Civil Aeronautics Board recently granted tentative permission to five airlines to operate low-cost commuter service between Midway and 17 other locations.

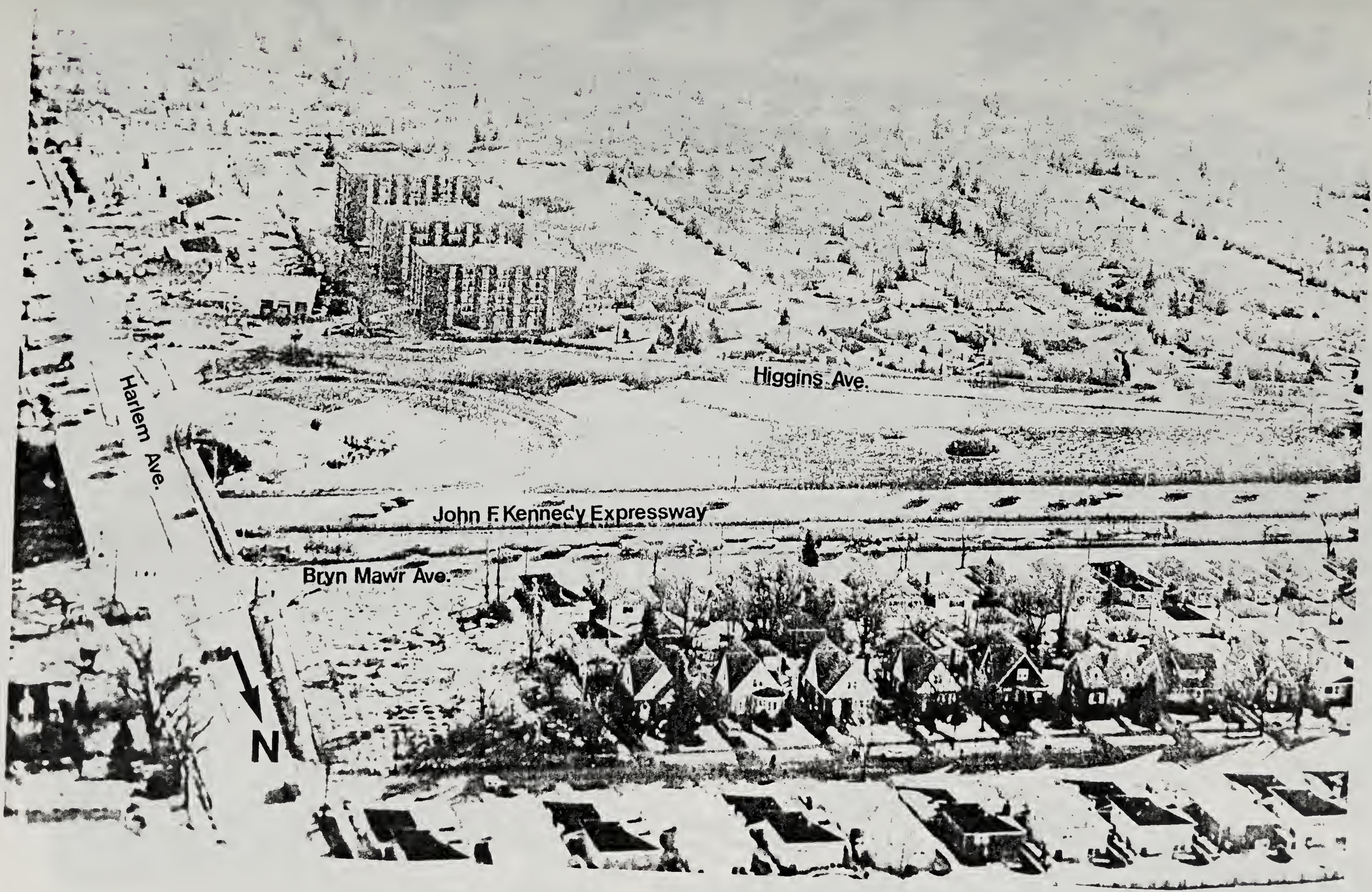


Kennedy Expressway Median View East from Harlem Avenue

Figure V-9

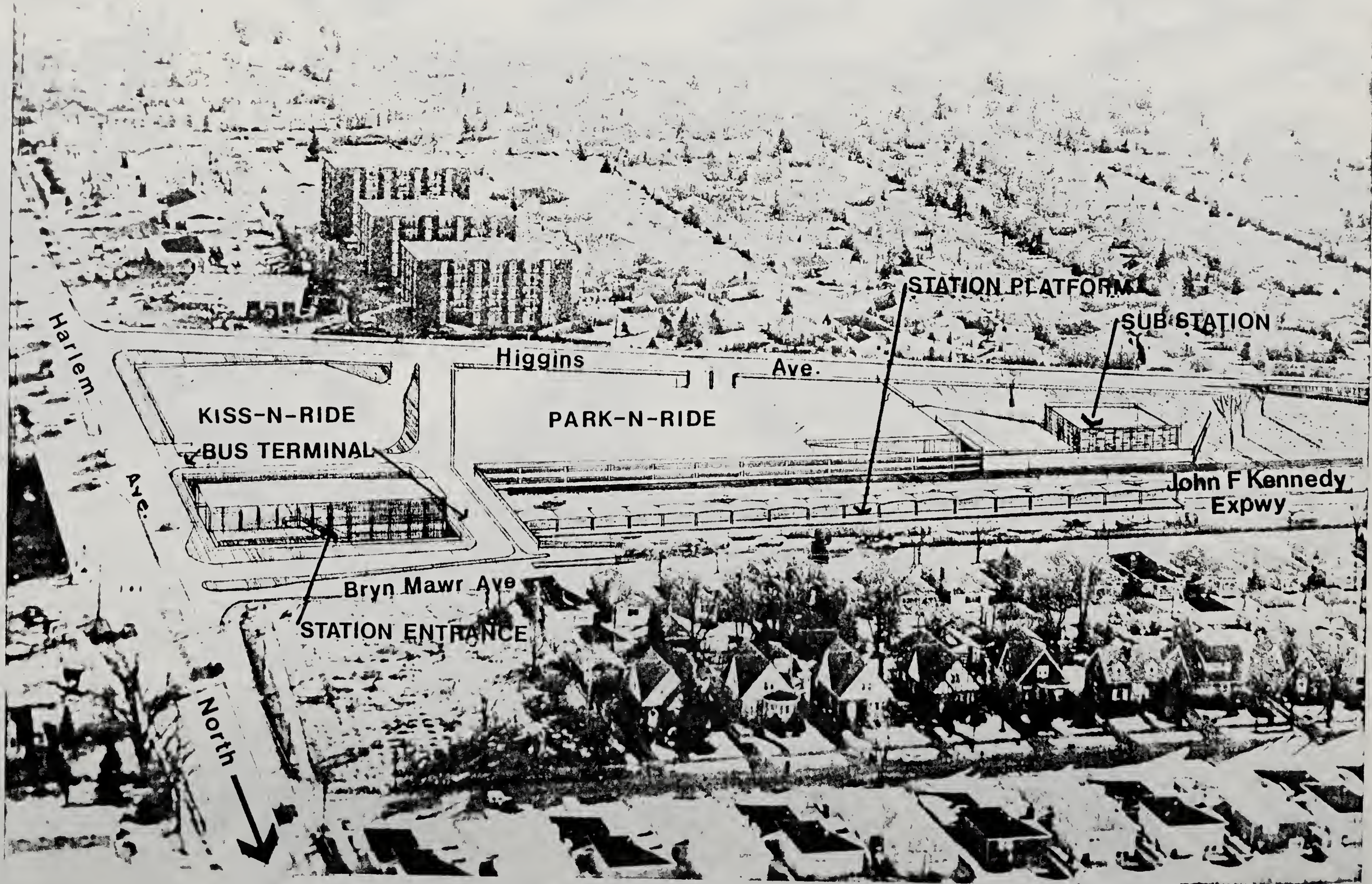


Kennedy Expressway Median View Southeast from Foster Avenue **Figure V-10**



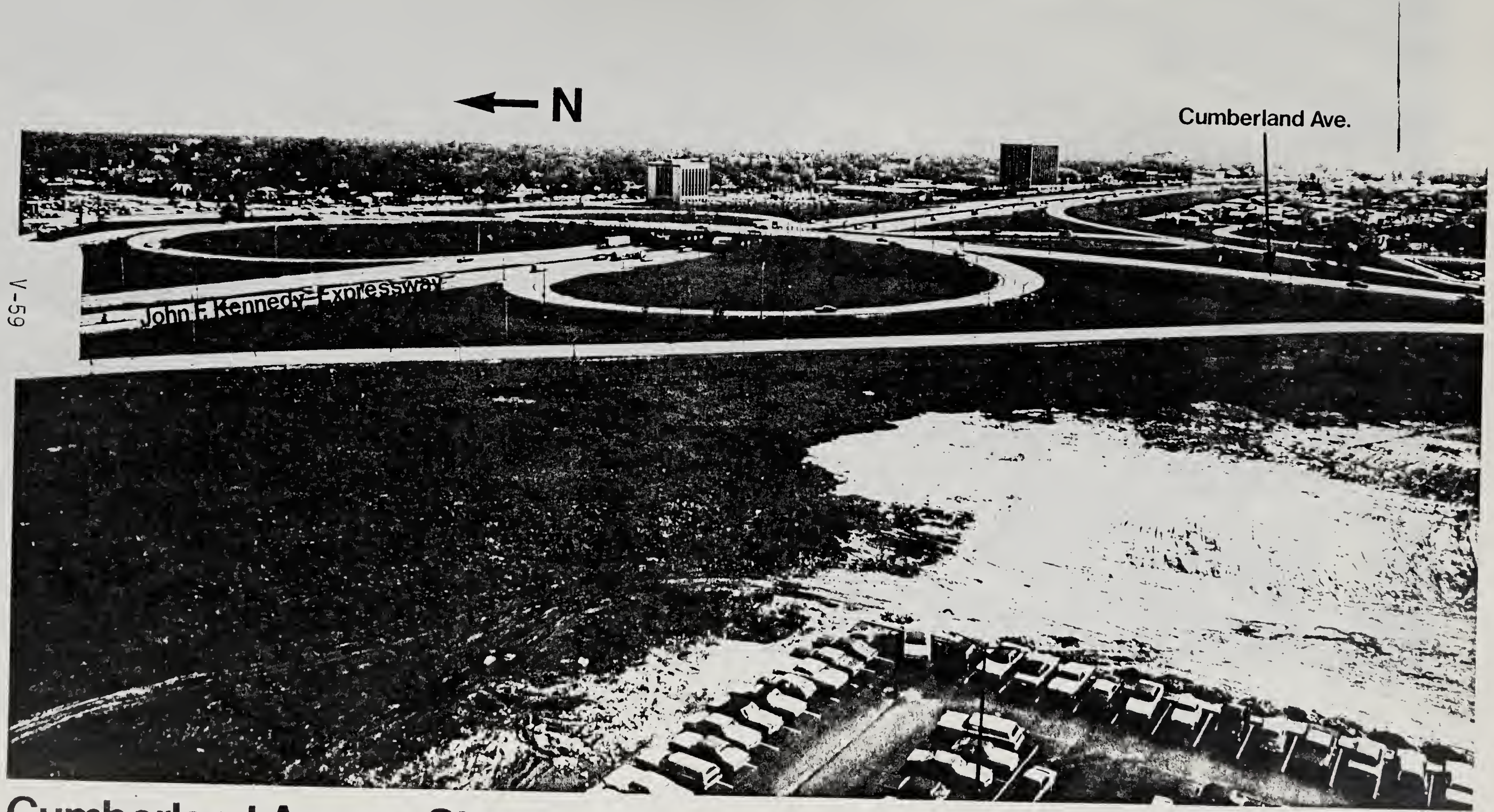
Harlem Avenue Station Site

Figure V-11



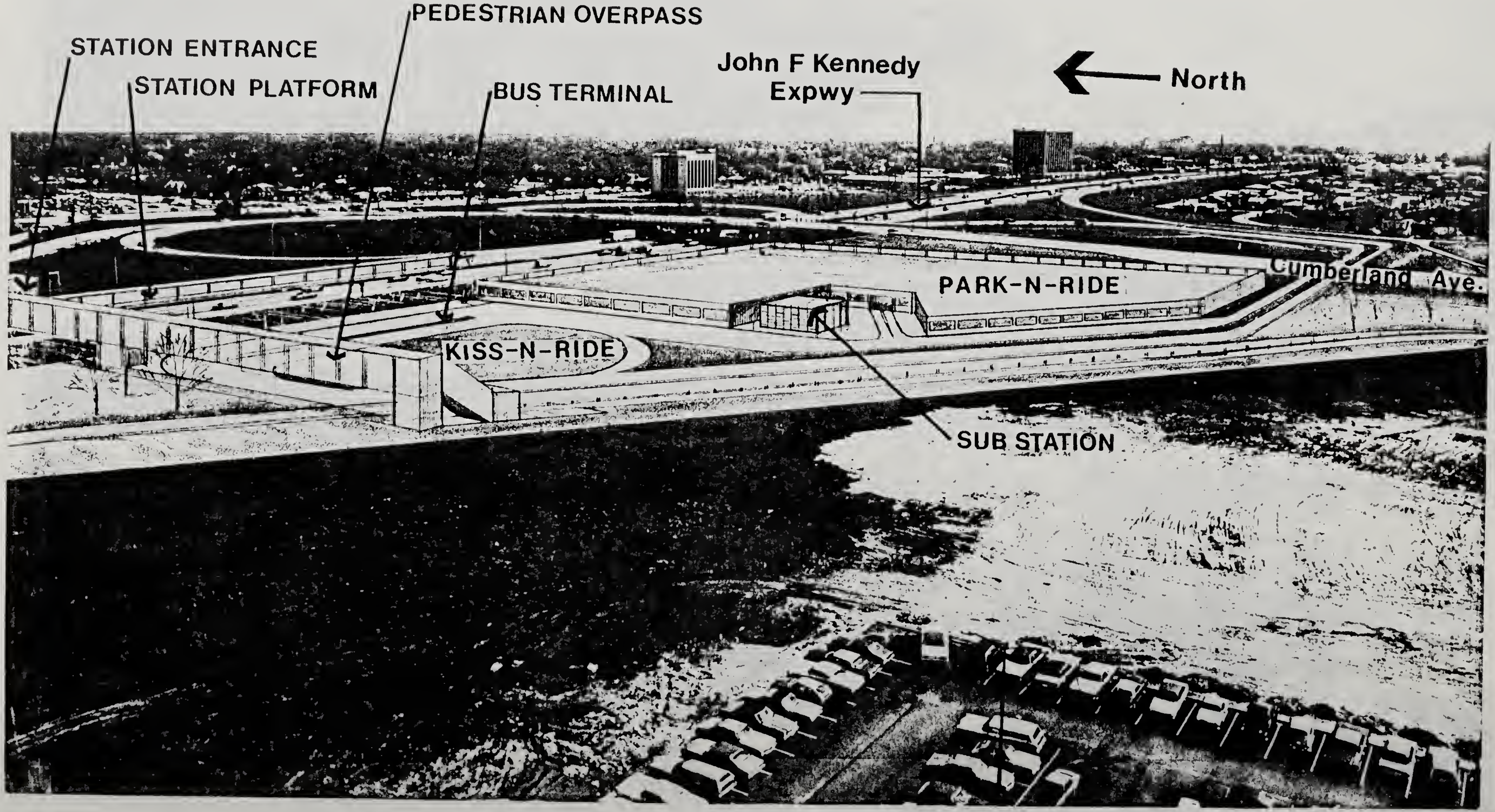
Harlem Avenue Station

Figure V-12



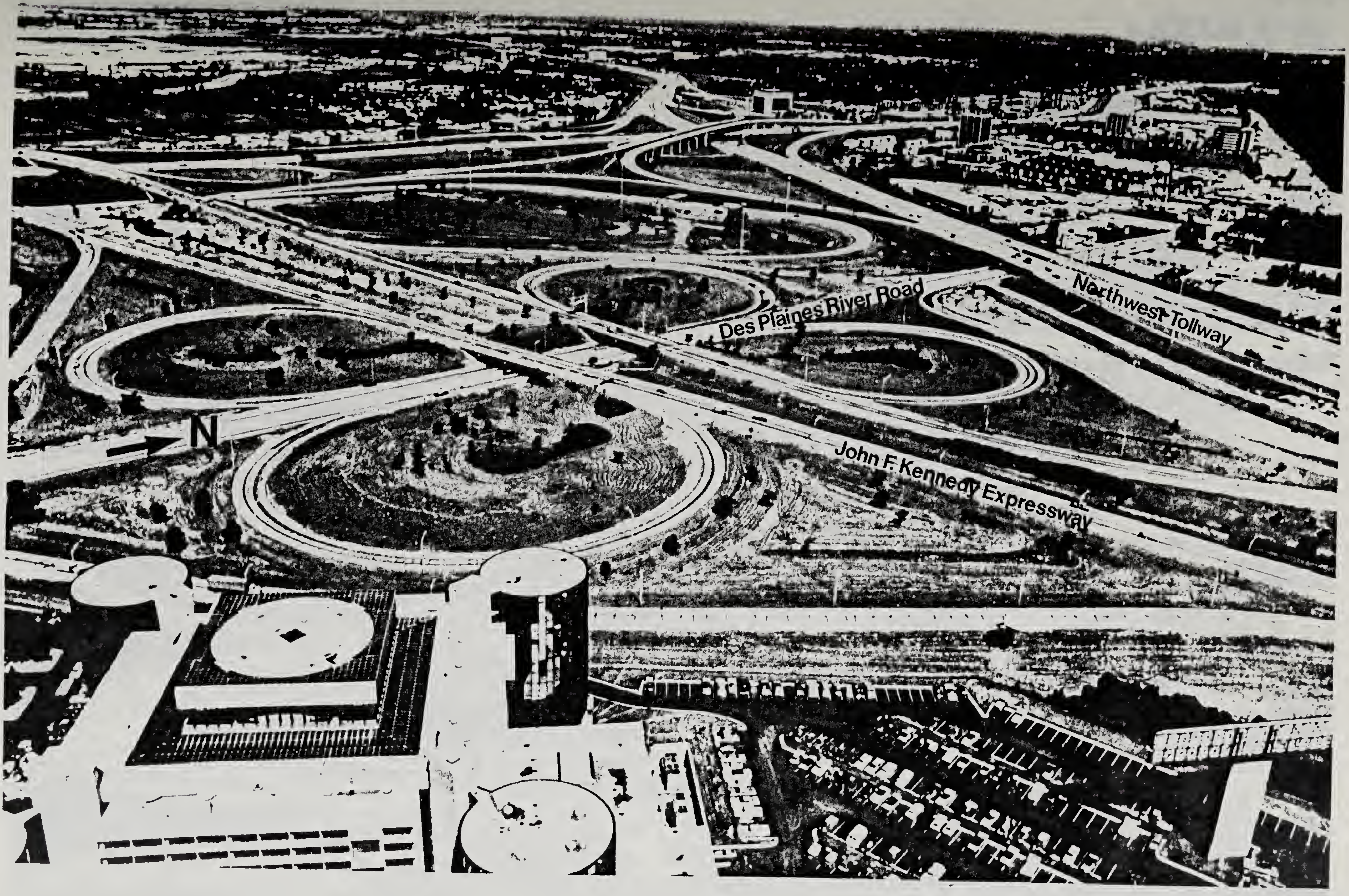
Cumberland Avenue Station Site

Figure V-13



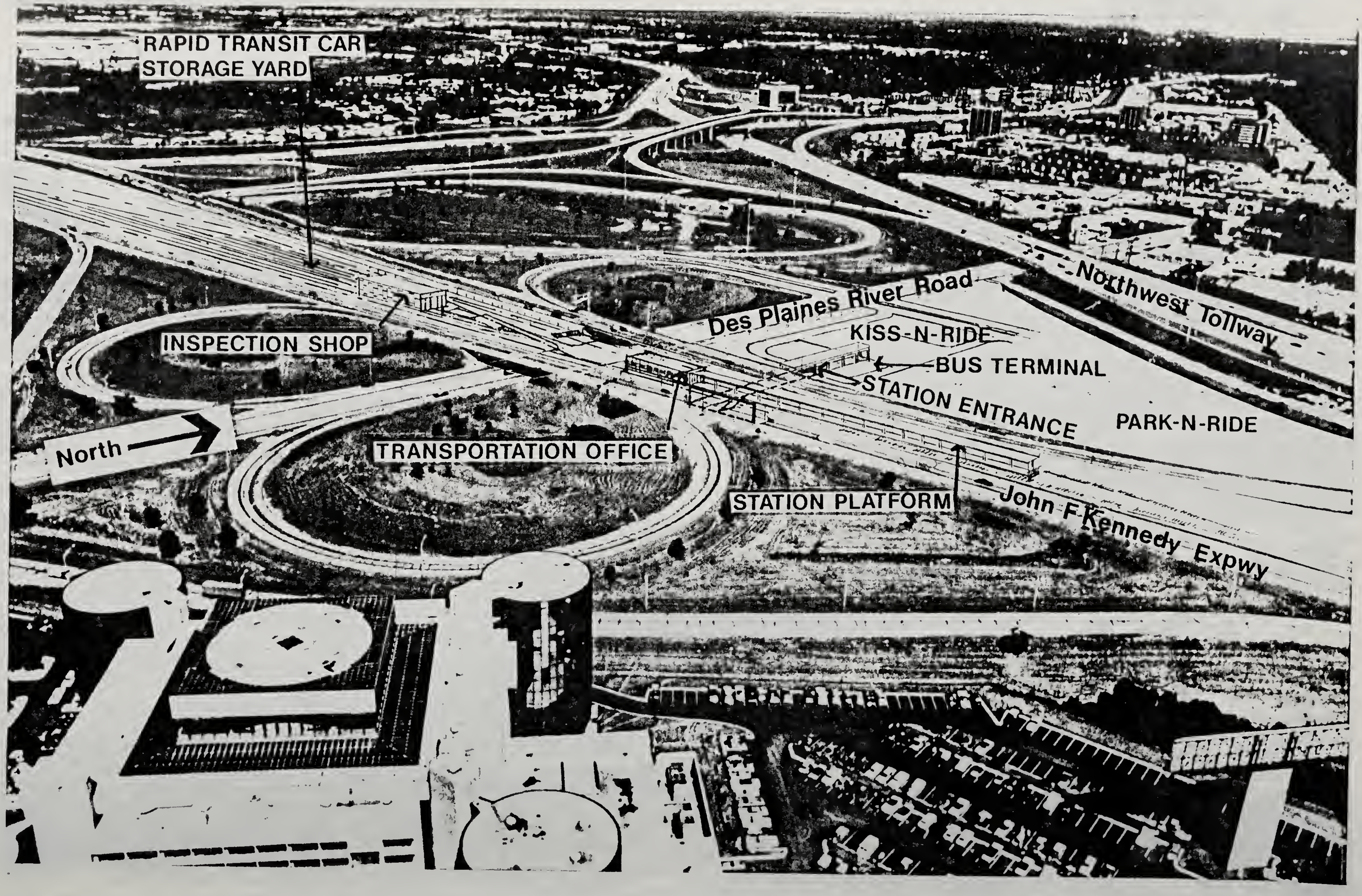
Cumberland Avenue Station

Figure V-14



Rosemont Station Site

Figure V-15



Rosemont Station

Figure V-16

O. OVERALL IMPACT

The overall impact of the O'Hare Extension can be defined as the combination of its effects at both the regional and local levels. The extension will have significant regional and local benefits, whereas the majority of the project's negative impacts will be felt on the local level.

The primary regional benefit will be improved transportation in the Kennedy Expressway Corridor. The addition of the rapid transit mode will increase the corridor's capacity without increased reliance on the motor vehicle. The transit addition will mean faster and more reliable transportation between the CBD and the airport as well as increased capacity for commuter trips from the Northwest section of the city and its adjacent suburbs to the CBD.

Regional land use patterns will be reinforced by the extension. O'Hare Airport will be provided with the ground transportation support it needs to continue to operate effectively as the region's commercial air traffic center. The Central Area of Chicago will be strengthened as the most accessible place in the region and as the region's cultural, commercial and retail center. Additionally, the Central Area's role as the region's major hotel and convention center will be reinforced with increased accessibility from the airport. The region's economy will benefit from the ongoing vitality of O'Hare Airport and the continuing strength of the Chicago region as the convention capital of the nation.

Regional air quality will be improved by airport users' and commuters' mode switch to transit.

Regional energy consumption for transportation in 1985 will be lowered by use of the rapid transit extension and the consequent lesser reliance on the motor vehicle. The decrease in transportation related energy use, however, must be balanced against the increase in energy consumption resulting from development induced or supported by the extension.

The region's transit dependent will find the Northwest section of Chicago and adjacent suburban townships much more accessible. Thus, jobs, services, and institutions in this area will be more available to those who rely on public transportation.

These regional benefits will be accrued at the expense of regional disbenefits resulting from construction and operation of the O'Hare Extension. The short-term construction effects will be significant. Over the two to three year construction period, major regional transportation arteries, the Kennedy Expressway and the Northwest Tollway, will be affected by lane closures and detours, resulting in traffic delays at construction sites.

The second disbenefit of regional scope is the O'Hare Extension's inability to meet its operating expenses with its operating revenue. The operating deficit will need to be met by subsidies from the Regional Transportation Authority. Deficits for the O'Hare Extension are, however, expected to be approximately the same percentage of total operating costs as for the rest of the CTA rapid transit system.

Benefits at the local level include a significantly improved public transportation service for people living in the vicinity of the O'Hare Extension. The three intermediate stations will provide improved access to the rapid transit system and will elimate the present lengthy bus rides required to reach the Jefferson Park Rapid Transit terminal by public transportation. This will be especially important to the transit dependent, those who must rely on public transportation. No significant increase in crime or decrease in personal safety will result from the transit extension.

The transit extension will support the development of underutilized or vacant land located near intermediate stations. This impact will be most substantial at Cumberland Avenue where large parcels of developable land lie along expressway right-of-way. Development of such land will increase job opportunities and could indirectly increase land values in surrounding areas.

Local disbenefits will result because traffic movements on local streets near station sites will be disrupted during construction. In addition, construction at these locations will create impacts, i.e. noise, dust, and dirt, normally associated with such activities.

Once construction is completed, the use of the intermediate stations and their associated Park-n-Rides and Kiss-n-Rides will increase local traffic volumes during the morning and evening rush periods. Traffic increases will be confined to major streets, and the provision of parking garages should negate substantial pressure for parking on residential streets near station sites.

Park-n-Ride use and station access by motor vehicles will create air pollution in areas surrounding the station complexes. Air quality will not be significantly impacted at either the Rosemont or Cumberland station sites. At Harlem Avenue, however, the National Ambient Air Quality Standard could be exceeded during the first three years of garage use.

Noise levels along the O'Hare Extension route will increase due to train operations. The noise guidelines set by the American Public Transit Association will be slightly exceeded in residential areas closest to the transit line. The effect of this impact, however, will be minimized by the location in the expressway median. Neither the Rosemont Yard nor station sites at the airport, in Rosemont, or at Cumberland Avenue will result in significant visual intrusion due to their distance from sites sensitive to the addition of transportations related facilities. The Harlem Avenue station will have a greater impact as it is located close to moderate density residential areas.

The overall impact of the O'Hare Extension then will be significant benefits to the regional transportation system, substantial support for existing regional land use patterns, improved regional air quality and energy consumption patterns, greater mobility for persons along the transit route, and support for advantageous changes in local land use. These benefits will be accrued at the expense of temporary disruption during construction, deficits incurred in the operation of the extension, local traffic increases and negative effects on local air quality, noise levels, and the visual environment.

VI. EFFECTS ON PARKLAND AND HISTORIC PROPERTIES

A. EFFECTS ON PARKLAND

The Cook County Forest Preserve District owns a parcel of land through which the O'Hare Extension will pass. This parcel, the Indian Boundary Division of the District, is a linear tract of forest preserve, lying generally in a north-south direction. The Division extends from Touhy Avenue on the north to Madison Street on the south, a distance of approximately 9 miles. Its eastern and western extremes are Thatcher Avenue and Des Plaines River Road, respectively. (See Figure VI-1.) This parcel is subject to the provisions of Section 4(f) of the Department of Transportation Act. Section 4(f) states that the U.S. Department of Transportation may approve a project which requires the use of publicly owned land from, among others, a park or recreation area of local significance, as determined by the officials having jurisdiction thereof, or land from an historic site of national, state, or local significance, as determined by such officials, only if:

1) there is no feasible and prudent alternative to the use of such land, and

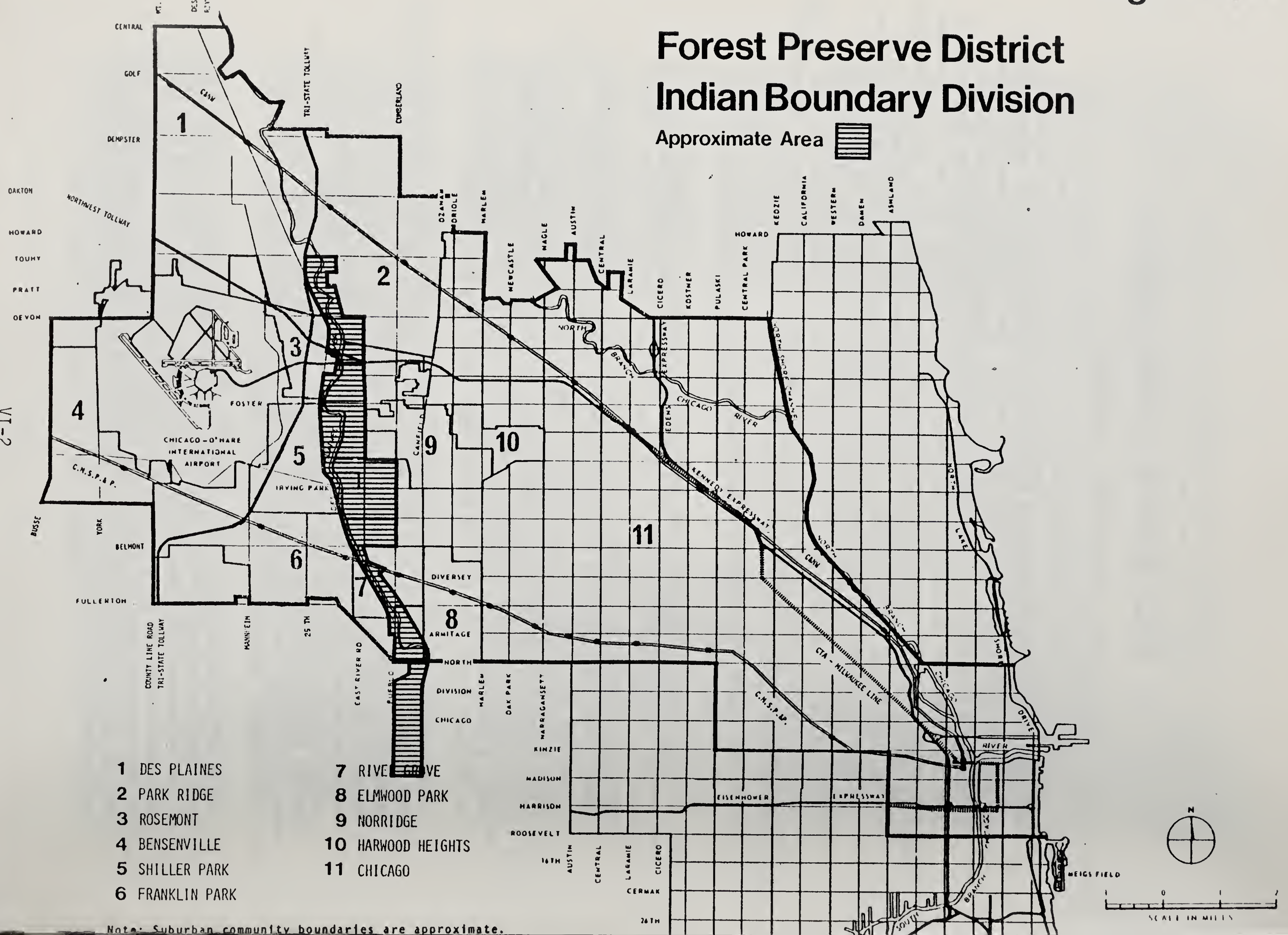
2) such project includes all possible planning to minimize harm to such land.

The Indian Boundary Division is a 3,163 acre section of the 64,756 acres of forest preserve owned and maintained by the Forest Preserve District. The purpose of the preserve is to provide sanctuaries of native landscape in the urban area, with limited recreational facilities included along its fringes. Such facilities in the Indian Boundary Division include: numerous picnic areas, two ice skating lagoons, a model airplane flying field, a Boy Scout Camp, a golf course, a tobogganing area, two canoe and rowboat ramps on the Des Plaines River, hiking and equestrian paths, and a playfield.

In 1956 and 1958, the Forest Preserve District granted public easements through the Indian Boundary Division for the construction of the Northwest Tollway and Kennedy Expressway, respectively. These adjacent easements are presently occupied by the Kennedy Expressway-Northwest Tollway junction. The Forest Preserve owned land which is required for O'Hare Extension right-of-way is wholly located within easements granted for transportation use. The design of the Kennedy Expressway, as originally conceived and later executed, included allocation of sufficient space in the expressway median for a future rapid transit extension. (See Figure VI-2.)

The alternatives analysis for a future rapid transit service to O'Hare Airport included nine schemes, five bus and four rail. The analysis of bus alternatives indicated that none of the schemes, including the existing bus service, provided a level of service adequate to meet the projected 1985 travel demand in the Kennedy Corridor. Patronage estimates for these schemes showed that any bus scheme would attract only about one tenth of the total 1985 transit level demand.

Figure VI-1



Forest Preserve District
Indian Boundary Division

Approximate Area ▤

1 DES PLAINES
2 PARK RIDGE
3 ROSEMONT
4 BENSENVILLE
5 SHILLER PARK
6 FRANKLIN PARK
7 RIVER GROVE
8 ELMWOOD PARK
9 NORRIDGE
10 HARWOOD HEIGHTS
11 CHICAGO

Note: Suburban community boundaries are approximate.

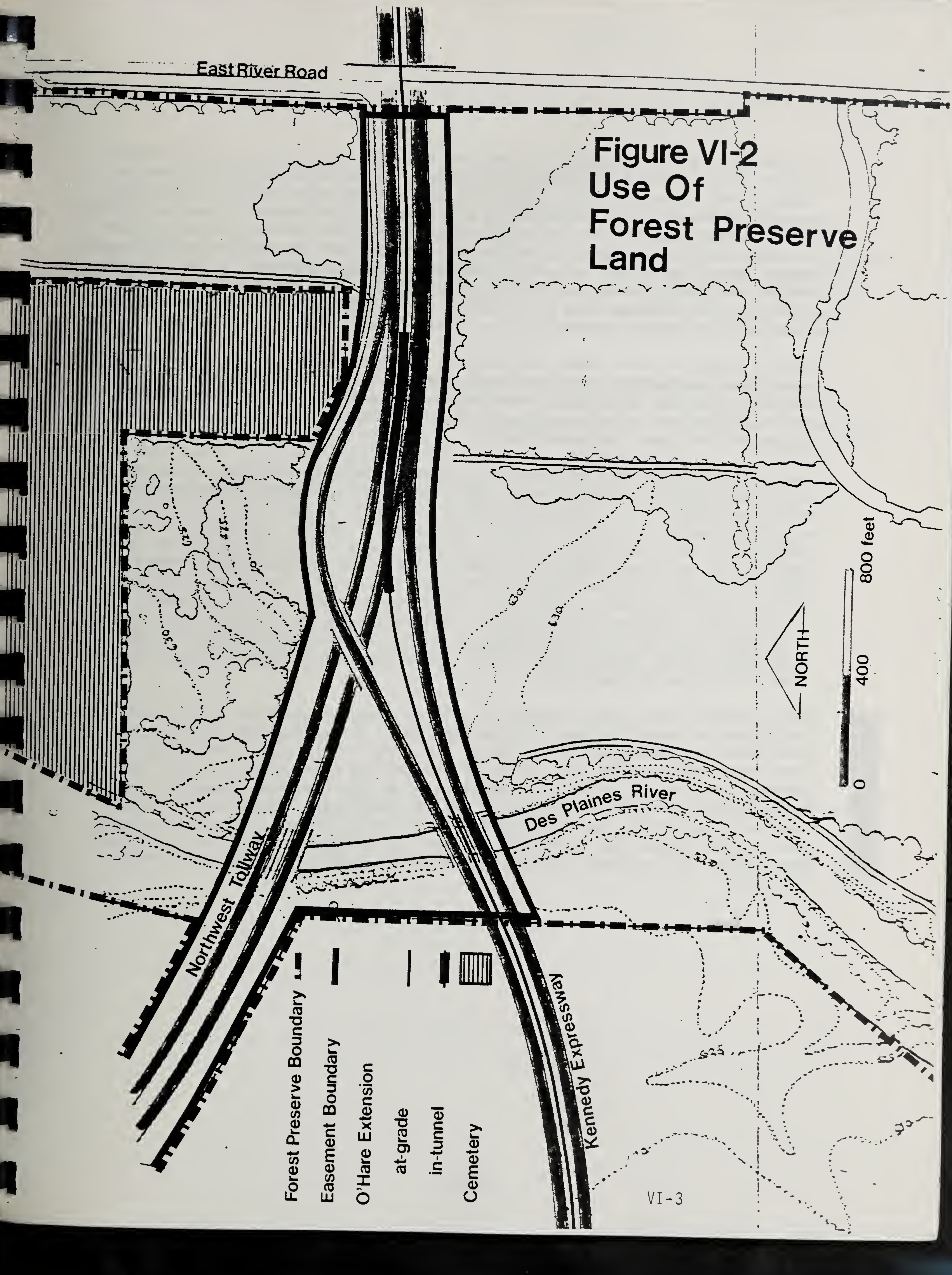


Figure VI-2
Use Of
Forest Preserve
Land

Of the four rail alternatives, three required construction within the Kennedy median. The fourth alternative, an extension of the Milwaukee Road commuter line, proved to be the least attractive rail scheme under service, patronage, and cost criteria. The extension of a Chicago and Northwestern commuter service in the Kennedy median also proved inadequate under the same criteria. Of the two remaining rail schemes, both CTA system extensions in the Kennedy Expressway median, the alternative including intermediate stations proved to be the best choice when tested under a wide range of economic, environmental and social criteria. (See Chapter III for a full discussion of alternatives and for the alternative selection process.)

The CTA extension with three intermediate stations is the only alternative under final evaluation to satisfy both airport related and commuter travel demand. Since the alternative uses right-of-way in the Kennedy Expressway median, it can therefore be stated that no feasible and prudent alternative exists to the use of this parkland.

The impacts of transit operation on the Forest Preserve will be limited to the noise generated by passing trains. This impact is effectively minimized by operating trains in an established noise corridor, thereby localizing the negative effects associated with the operation of various forms of land transportation. The noise impact will be further mitigated by the operation of the transit line in subway tunnel for some of the route through Forest Preserve Land. It should also be noted that recreational activities which could be affected by transit noise, boating, hiking, or horseback riding, normally result in short exposure to such noise. With the exception of available fishing in certain relatively polluted segments of the Des Plaines River and those activities listed above, recreational facilities have not been located in areas impacted by transit operation.

Construction of the O'Hare Extension will be conducted so that no recreational facilities or access to them will be disrupted. Erosion of the Des Plaines River bank and subsequent pollution of the river itself will be minimized by conducting construction work in coffer dams behind steel sheet piling. The construction contractors will be required to assure that the stream bank and any adjoining land are restored to a natural condition. Construction operations will not affect the "developed trail" running through the construction zone, as it crosses the expressway easement via a highway bridge at East River Road. Thus, this project includes all possible planning to minimize harm to parklands.

B. EFFECTS ON HISTORIC PROPERTIES

A survey of sites in or eligible for inclusion in the National Register of Historic Places has been completed. The only sites in or eligible for inclusion in the Register found in the survey are located well away from any areas physically impacted by either the construction or operation of the O'Hare Extension. As a result, no historic site included or eligible for inclusion in the Register will be affected by the project, as proposed. The State Historic Preservation Officer's (SHPO) concurrence with this finding is presented on page VI-6.

As is stated in the letter, the SHPO indicated no effect on archeological sites will result from the construction or operation of the proposed project. Nonetheless, the Illinois Department of Conservation's (IDOC) normal archeological construction procedures will apply. These procedures require that the IDOC be notified of any archeological find uncovered during construction, and that measures be taken to assure that the IDOC has the opportunity to retrieve the archeological object(s) from the construction site.

Illinois Department of Conservation
life and land together
605 STATE OFFICE BUILDING • 400 SOUTH SPRING STREET • SPRINGFIELD 62706
CHICAGO OFFICE – ROOM 100, 160 NO. LASALLE 60601
David Kenney, Director • James C. Helfrich, Assistant Director

September 21, 1977

Mr. Marshal Suloway
Commissioner of Public Works
City of Chicago
City Hall
Room 406
Chicago, Illinois 60602

Dear Mr. Suloway:

This letter is to inform you that we have reviewed the specifications of your project for the Kennedy Rapid Transit Extension - Jefferson Park to O'Hare Airport.

Our review of the records indicates that your project will have no effect on historic, architectural or archaeological sites in the area.

This letter of clearance relates only to cultural considerations and should not be viewed as a blanket write-off which would include natural areas or other concerns of the Department of Conservation.

If you have further questions regarding this, please contact me.

Sincerely,

David Kenney

David Kenney
State Historic Preservation Officer

DK/lb

VII. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The construction and operation of the O'Hare Extension will create some adverse environmental effects that cannot be avoided. Following is a brief discussion of those effects. For a more complete discussion of each, refer to the appropriate section of Chapter V, Environmental Impact of Recommended Alternative.

The O'Hare Extension, as is the case with the CTA Rapid Transit System as a whole, will not receive sufficient fare-box revenue to cover its operating expense. The annual operating deficit is expected to be $3.1 million, in 1977 dollars. The operating deficits incurred by the O'Hare Extension will be met by operating subsidies from the Regional Transportation Authority.

The redesign of arterial-expressway interchanges will reduce the number of expressway access points by removing selected ramps. This effect will be mitigated by the redesign of appropriate remaining ramps and the inclusion of signalized intersections at appropriate locations. As a result, the same access and egress movements will be available at each of the three affected interchanges with capacity great enough to accommodate all projected traffic volumes.

The provision of park-n-ride facilities at intermediate station sites will increase traffic volumes in the vicinity of intermediate station sites. These traffic increases will increase the likelihood of traffic congestion and travel delays on preferential streets serving the intermediate stations. The provision of park-n-ride facilities, on the other hand, will mitigate the effect of increased parking pressure on local streets near intermediate stations.

Increased traffic volumes on local streets and vehicle movements in station facilities will increase air pollution levels. At the Harlem Avenue Station site, levels of carbon monoxide could slightly exceed the National Ambient Air Quality Standards during its initial three years of operation.

The operation of the transit extension will increase ambient noise levels in areas surrounding the transit corridor. Operation of the O'Hare Extension is expected to exceed the American Public Transit Association (APTA) guidelines for noise in the wayside community. However, APTA standards are expected to be exceeded only in residential areas closest to the transit line and then by only 1dB(A). In any case, noise from transit operations will be effectively masked by noise from traffic on the Kennedy Expressway, in the median of which the transit line will be located.

The extension of a major public transportation system into unserved areas will create an unavoidable visual impact. Although elements of the transit extension have been designed and located so as to minimize their visual intrusion, some impact will occur.

Local areas in the vicinity of construction sites will be temporarily impacted by the unavoidable adverse effects of construction activities. These effects include fugitive dust, exhaust emissions, dirt escaping the site, construction noise, and traffic congestion created by construction activities in the expressway median and on local streets.

VIII. THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The major short-term use of the environment associated with the O'Hare Extension involves construction of the track, roadbed, stations and ancillary facilities. The major negative impact resulting from this short-term use of the environment is disruption to vehicular traffic on the Kennedy Expressway. This disruption will be evident over most of the 2 to 3 year construction period.

After construction is completed, the disruption will cease, and operation of the transit system will begin. In return for the negative short-term impacts of construction, the transit system will result in a long-term primary effect on productivity, namely, more intense transportation use of the Kennedy Expressway right-of-way.

The ability of the Kennedy Expressway Corridor to transport people and goods will be significantly increased. This increase in the productivity of the transportation system will lead to a number of secondary productivity effects, which include:

1. provision of an adequate ground access system to O'Hare Airport;
2. increased value of undeveloped and underdeveloped land adjacent to the rapid transit/expressway corridor;
3. maintenance of the CBD as the most accessible place in the region;
4. intensification of the use of the CBD as the cultural, commercial, and convention center of the region;
5. growth of the city and adjacent townships at the expense of suburbs beyond the service area; and
6. increased effectiveness of the regional transportation network, with associated air quality and energy consumption benefits.

IX. IRREVERSIBLE AND IRRETREIVABLE COMMITMENT OF RESOURCES

The O'Hare Extension, as proposed, will involve the irrecoverable committment of the following resources:

a) the materials used to construct the rapid transit extension, including raw materials and the decrease in useful life of machinery used in construction;

b) the amount of human labor required to construct and operate the system; and

c) the public tax dollars committed to construction of the proposed system and subsidization of the transit service.

No land resources will be committed to the O'Hare Extension that are not within the right-of-way of existing highway facilities.

The breakdown of resources used for the project is presented in the following tables.

TABLE IX-1

MATERIALS INVOLVED IN THE CONSTRUCTION OF THE O'HARE EXTENSION

STEEL, TONS	CONCRETE, CUBIC YARDS
25,000	250,000

TABLE IX-2

HUMAN RESOURCES COMMITTED

ACTIVITY	LABOR FORCE	DURATION
Construction	1000*	2 to 3 years
Operation and Maintenance	88	Life of Project

*Totalling 21,460 man months of labor.

TABLE IX-3

ECONOMIC RESOURCES COMMITTED*

ACTIVITY	AMOUNT	DURATION
Construction	$136 million (approx.)	2 to 3 years
Rail Car Purchase **	$ 40 million (approx.)	One Time Purchase
Operational Subsidy	$3.1 million (approx.)	Life of Project

*More detailed presentation of the economic requirements of the system is presented in Chapter IV.

**Rail Car Purchase will be part of an ongoing CTA rail car replacement program, which is not a part of this capital grant application.

X. COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

A. INTRODUCTION

The circulation period for the Draft EIS began on May 12, 1978, and ended on July 11, 1978. During that period, twenty-seven commenting letters were received from federal, state, and local agencies, and from concerned citizens. The official Public Hearing on the Draft EIS was held on June 15, 1978, in the Chicago City Council Chambers, City Hall, 121 North LaSalle Street, 60602 at 2 p.m. Testimony was taken on this date before an appointed hearing officer. Attendance included the staff of the Office of Program Analysis of the Urban Mass Transportation Administration. During the hearing session, Chicago Plan Commissioners and four additional persons presented oral testimony. During the ten day period, June 15, 1978, to June 25, 1978, which allowed for inclusion of written comments into the official Public Hearing transcript, two written comments were received by the Secretary of the Chicago Plan Commission, the Public Hearing officer. Taking into account commenters who submitted both written and oral testimony, a total of 30 different commenters responded. The transcripts of the Public Hearing may be inspected at the offices of the Urban Mass Transportation Administration in Washington, D.C., and locally at City of Chicago Department of Public Works, Research and Development Division. All substantive comments are included in this chapter with a response provided to each comment. In some cases, the individual comments have not been reproduced verbatim. However, carful attention has been paid to accurately and completely represent the original comments. Notations identifying the commentor(s) appear after each comment. The material provided in the Draft EIS has been revised as necessary to adequately address the comments. Changes in the text are identified by a vertical bar in the left margin.

The following are the agencies, organizations, and private citizens who commented on the Rapid Rail Transit Extension to Chicago O'Hare Airport Draft Environmental Impact Statement during the circulation period.

Airport Ground Transportation Association, Inc. (AGTA)

Chicago Area Transportation Study (CATS)
Chicago Department of Planning, City and Community Development (DPCCD)
Chicago Department of Environmental Control (DEC)
Chicago Plan Commission (Messrs. Levi, Goldblatt, Messe, or Pate)
Chicago Transit Authority (CTA)

DuPage County Regional Planning Commission (DPRPC)
Des Plaines Publishing Company (DPPC)

Greater North Michigan Avenue Association (GNMAA)

Illinois Archeological Survey (IAS)
Illinois Department of Transportation- Bureau of Location and Environment (IDOT-BLE)
Illinois Department of Transportation- Department of Aeronautics (IDOT-DA)
Illinois Environmental Protection Agency (IEPA)

Miller, F.

Northeastern Illinois Planning Commission (NIPC)
Norwood Park Citizens Association (NPCA)
Norwood Park Chamber of Commerce (NPCC)
Northwest Cumberland Association (NWCA)
Northwest Municipal Conference (NWMC)

Pucinski, Ald. R.

Resurrection Hospital (RH)

Taylor, D.O.

United States Department of Agriculture (US DOA)
United States Department of Housing and Urban Development (US HUD)
United States Department of Interior (US DOI)
United States Department of Transportation
  Federal Aviation Administration - Washington, D.C. Office
    (FAA-Wash., D.C.)
  Federal Aviation Administration - Great Lakes Region (FAA-GLR)
  Federal Highway Administration - (FHWA)
United States Environmental Protection Agency (US EPA)

Will County Regional Planning Commission (WCRPC)

B. COMMENTS AND RESPONSES BY TOPIC

1. Transit Operations

Comment 1:

The Harlem Avenue bus line should run continuous past the Harlem Avenue station to eliminate extra turn-on and turn-off traffic, as well as to facilitate the line's use by shoppers with packages who would have to transfer at the Harlem station under the present bus line plan. (DPPC)

Response 1:

The planning effort that resulted in the feeder bus route configuration for the O'Hare Extension considered a through bus route past the Harlem Avenue Station on Harlem Avenue. This route configuration was not accepted for the following reasons:

A) The demand for bus service is significantly different north and south of the proposed Harlem Avenue Station. By terminating routes at the Harlem Station, these different levels of demand can be more adequately and efficiently satisfied.

B) Operating a through service on Harlem Avenue past the rapid transit station would be difficult because logically the bulk of the services north and south of the station are provided by different carriers--Nortran and the CTA, respectively.

C) Terminating routes at the Harlem Station is convenient since operating a through route would not eliminate turn-on and turn-off traffic. For safety reasons, unloading passengers on the east side of the Harlem Avenue bridge, thereby forcing patrons to cross Harlem Avenue to enter the station, is not feasible. As a result, these buses would enter and exit the station complex area, even under a through route scheme.

It should also be noted that transferring between bus routes serving the areas north and south of the station will be very convenient. Loading bays for these routes will be side by side, and in most cases, buses should be waiting in the loading bay to accept transferring passengers. Also, terminating routes at the Harlem Station will increase the consistency and reliability of service, as consistency and reliability tend to decrease as bus routes lengthen.

The present Harlem Avenue bus scheme is a preliminary plan. The desire for a through bus on Harlem Avenue will be transmitted to the CTA.

Comment 2:

Will the stops at the three intermediate stations between Jefferson Park and O'Hare be "A" or "B" or will all trains stop at each station? (DPPC)

Response 2:

No final plans have been established by the CTA for stop designations at intermediate stations. Current scenarios under discussion include a plan in which Harlem would be an "A/B" or all stop station, with Cumberland served only by "A" trains and Rosemont served only by "B" trains. In any case, the three intermediate stations would not all be "all stop" stations, except during night operation when all trains stop at all stations on the line.

Comment 3:

Will CTA trains run more frequently during the rush hour? (DPPC)

Response 3:

After completion of the O'Hare Extension, service headways will be approximately the same as they are now. That is, five minute headways during regular daytime hours, 2½ minutes during peak hours, and 15 minutes at night. See page IV-19 of FEIS.

Comment 4:

Will some sort of shuttle bus be available for airport employees who do not work near terminal buildings? (DPPC)

Response 4:

As part of the bus routing scheme proposed in connection with the O'Hare Extension, a shuttle bus, as described on page IV-22 of the FEIS, will operate between the terminal area and the airport's cargo area, the main employment center beyond the terminal area.

2. Transit System

Comment 5:

In order to remove park-n-ride patrons from the area of Harlem Avenue and the Kennedy, a park-n-ride facility could be constructed back along one of the bus lines, from which auto drivers would take a CTA bus to the station. (DPPC)

Response 5:

The park-n-rides are planned to facilitate the modal change from auto to rapid transit. As a result, their location contiguous to the transit stations is essential. Providing a park-n-ride back along one of the buslines would require auto drivers to transfer modes twice and would significantly increase their total travel time. As the driver convenience essential to the successful operation would be lost, drivers would be much more apt to drive directly to the station and park on streets in residential neighborhoods, or avoid the use of transit altogether.

Comment 6:

In order to retain the circulat ramp at Harlem Avenue, which would save people coming from the north from having to cross traffic for expressway access, could the bus bridge over the expressway be increased to four lanes to accommodate bus traffic and to allow two lanes for kiss-n-ride patrons, one lane for drop-off and one lane for through auto movements? (This comment was made in conjunction with Comment 5.) (DPPC)

Response 6:

The proposal to increase the width of the bus bridge to accommodate kiss-n-ride patrons would not allow sufficient space for auto drop-off. Between 8 and 10 spaces, maximum, could be provided to duplicate the service provided by the planned 44 space Kiss-n-Ride facility. Conflicts would occur as through traffic would be blocked by persons stopping to park or drop off passengers.

Comment 7:

Our preference for rail transit service to O'Hare Airport has been the usage of Milwaukee Road-Soo Line trackage with loading and unloading facilities in the general Merchandise Mart-Apparel Center area (in the area near Wells Street and the Chicago River.) (GNMAA)

Response 7:

The alternative of using Milwaukee Road and Soo Line trackage for airport service has been carefully analyzed in Chapter III of the Final EIS, pages III-23 and III-24. This scheme would provide a significantly lower level of service than any other rail alternative analyzed.

Adding a loading-unloading facility along an already congested segment of the line would only further exacerbate existing congestion problems and deteriorate the existing level of service, while significantly reducing accessibility to the Near Northside.

Comment 8:

We suggest consideration of Scheme B-1, the existing O'Hare Express bus service, or Scheme R-2, CTA rail extension to O'Hare Airport with no intermediate stations, because Scheme R-1, the proposed alternative, would have to be subsidized by the RTA, would create noise, would create auto congestion and on-street parking resulting in increased congestion, pollution, and noise, would create visual impacts resulting in intermediate station areas looking like Jefferson Park, would alter access points to the expressway creating traffic conflicts, and would create dust noise and congestion during the two year construction period. (NPCA)

Response 8:

Alternatives B-1, R-1, and R-2 are extensively analyzed in Chapter III of the Final EIS, pages III-24 to III-30. Both the beneficial and adverse impacts of each of these alternatives were considered in the alternative selection process. As a result of this analysis which ranked each alternative according to ten criterion categories, alternative R-1 ranked the best.

Comment 9:

An alternative alignment to the single garage stub-end station that would provide rapid transit stations under each of the O'Hare passenger terminals has been proposed. (RTA, Meese)

Response 9:

The RTA alternative proposal, designed "Semi-Loop Subway", has been incorporated into the FEIS in Chapter III, and is analyzed in detail therein.

Comment 10:

Consideration should be given to the transit system's ability to either handle baggage or to some seating arrangement to accommodate baggage. (IDOT-DA, NIPC)

Comment 11:

Baggage removal and transport services should be included at the airport terminal station and possibly, at least, one downtown station. (NIPC, Levi, Pate)

Responses 10 and 11:

Consideration has been given to the accommodation of luggage on airport trains. For each new car equipped to accommodate luggage, the capital cost of the project would increase by approximately $500,000. By not providing these transit cars at this time, substantial cost savings are realized.

Although it is not expected that large numbers of air passengers using the extension will carry numerous or cumbersome pieces of luggage, a future decision by the CTA to provide luggage accommodation, if warranted, has not been precluded.

Space has been allocated in the pedestrian concourse at the O'Hare Terminal Station for luggage check-in facilities. The provision of such facilities is the responsibility of the airline companies and is subject to their perception of the need for such facilities.

Comment 12:

The extension would be more profitable if all park-n-rides were eliminated and stations were added at Nagle Avenue and at Canfield Avenue. (F. Miller)

Response 12:

The addition of stations at Nagle and Canfield Avenues coupled with the elimination of all proposed Park-n-Ride facilities would not result in a more profitable transit system because:

A) such a scheme would reduce total patronage, and therefore farebox revenue at intermediate stations,

B) maintenance costs at intermediate station locations would increase by about 67% with the addition of two intermediate stations, and

C) the savings resulting from elimination of the park-n-ride facilities would not cover the capital cost addition for the construction of two additional intermediate stations without park-n-ride facilities.

Comment 13:

The single track elevated loop alternative for airport service should be adopted because of its greater convenience and lower construction cost. (F. Miller)

Response 13:

The alternatives analysis for airport station design is presented in Chapter III, pages III-30 to III-38 of the Final EIS. Although least expensive in terms of capital cost, the single track elevated loop rated significantly below the selected alternative under patron convenience and comfort, construction disruption, and station operations criteria.

Comment 14:

Instead of constructing park-n-ride facilities at Harlem and Cumberland Avenues, the Rosemont facility should be enlargened to accommodate the traffic from the other two park-n-rides. (R. Pucinski)

Comment 15:

The park-n-ride facilities at Harlem and Cumberland Avenues should be eliminated. (DPPC, F. Miller, NWCA)

Response 15:

The park-n-ride facilities at the Harlem and Cumberland Avenue stations are key elements of the O'Hare Extension. These facilities have been designed so that traffic will have adequate access to and from them.

In planning intermediate station design, the need to facilitate the transfer of auto drivers to transit was realized not only because of congestion on the Kennedy Expressway during peak hours, but also because of the need for regional air quality control, for conservation of petroleum based fuels, for limiting traffic growth in the CBD, and for minimizing on-street parking near station locations.

Comment 16:

We advocate the relocation of the Harlem Avenue Park-n-Ride, so that emergency traffic to and from the hospital would not be adversely affected. (RH)

Response 16:

No option for the relocation of the Harlem Avenue Park-n-Ride exists. Each of the three intermediate stations designs already includes a park-n-ride facility and capital expenditures to install Park-n-Rides at downstream locations would be prohibitive. The capacity of the arterial street system is such that the spaces from the Harlem Avenue Park-n-Ride could not be relocated to either the Cumberland Avenue or Rosemont Station. (See Topic Category 6 for a discussion of access to Resurrection Hospital.)

Comment 17:

An adverse impact of the proposed project is that a heavily subsidized public mass transportation system is being proposed to provide a service duplicating an existing service provided by a private mass transportation firm. (AGTA)

Response 17:

The rapid transit extension to O'Hare Airport is required to satisfy the projected ground access demand to and from the airport. Rapid transit and Limousine/Coach will be two of five ground transportation modes serving the airport. The service provided by the extension will be an alternative to existing private airport transportation services which will not duplicate the door-to-door service provided by the private carriers. Many patrons will continue to utilize the private service after completion of the rapid rail extension.

Comment 18:

Alternative B-5, Exclusive Bus Lanes, deserves more serious consideration, including the effects of Continental Air Transport's use of such lanes. (AGTA)

Response 18:

Alternative B-5 is thoroughly analyzed in Chapter III of the FEIS. The exclusive lanes are proposed as an improvement option for the public transportation system. In this, as in all other cases, private airport ground access carriers are considered to provide a service separate from, but parallel to, the public service. The exclusive lanes are thus for the use of public carriers only.

Under the assumption that the private airport carriers used the exclusive bus lanes, such use would increase the 1985 Continental Air Transport patronage by 1080 trips per day. Such an increase is insignificant when compared to the 1985 airport related rapid transit demand of 24,000 trips per day. Such an increase would only occur if subsidization of the private carriers' operation in the form of a publicly funded capital investment for the exclusive bus lanes were provided.

3. Patronage and Ridership

Comment 19:

I would not be surprised that the 2000 passenger per day patronage on the existing O'Hare Express bus would be the limit of airport employee patronage on the extension, due to the distribution of jobs at the airport. (R. Pucinski)

Response 19:

The expected 1982 airport employee patronage on the extension is 7000 trips per day. This projection was made by the project consultant, Alan M. Voorhees & Associates, using an auto-rail transit binary choice, logit model supplied by the Chicago Area Transportation Study. The problem of distribution of employees to job locations removed from the Airport Terminal resulted in the creation of the Airport-terminal-Cargo Area shuttle bus.

Comment 20:

The CTA wants the park-n-ride at Harlem Avenue because they estimate it will generate an additional 1000 riders per day. (R. Pucinski)

Response 20:

The justification for the Harlem Avenue park-n-ride is not limited to the increase in patronage it will generate. The park-n-ride will alleviate congestion and air pollution problems on the Kennedy Expressway and in the CBD, will conserve petroleum based fuels, will provide travel time savings to rapid transit patrons, and will increase the accessibility of the entire rapid transit system.

Comment 21:

The Cumberland Avenue park-n-ride will not serve Chicago residents because they will have access to the station via bus routes. (NWCA)

Response 21:

The Cumberland Avenue Park-n-Ride has been designed to serve both users from the local areas near the station and expressway drivers. Estimates indicate that about one-half of the garage capacity will be filled by local area residents.

Bus service to the station is not the mode of accessibility many people would choose. Instead of overcoming the perceived inconvenience of the bus mode, some people would sooner drive to the CBD. By providing the park-n-rides, many of these auto trips will be shortcut to transit for the greater portion of the trip.

Comment 22:

The park-n-rides will draw passengers away from the Chicago & Northwestern suburban stations. (F. Miller)

Response 22:

The presence of the O'Hare Extension will affect patronage on some Chicago and Northwestern suburban stations. Since the C&NW terminal is located on the west end of the CBD, and since the downtown stations of the CTA's Milwaukee Line are generally located nearer the center of the CBD, the section of the CBD to which rail patrons are destined will certainly affect their choice of carrier. It is the overall service provided by the carriers that determines patrons' preferences.

It should be noted that at all C&NW stations within the O'Hare Extension Study Area parking is available for patrons. The number of parking spaces available at selected C&NW stations is listed below:

Norwood Park	225 spaces
Edison Park	260 spaces
Park Ridge	475 spaces
Dee Road	133 spaces
Des Plaines	739 spaces

Comment 23:

Thousands of other riders would be diverted from the existing CTA feeder bus system to the park-n-rides. (F. Miller)

Response 23:

Of the 21,500 trips per day made from the intermediate stations, 1,100 will be made by park-n-ride users who currently use CTA facilities. However, the portion of these trips using existing feeder buses for access to the Jefferson Park Station is unknown. Some of these trips are presently made by auto with drivers parking on residential streets in the Jefferson Park area. See table V-1, page V-13 of the FEIS.

Comment 24:

Where do the transit system patrons come from: the city, the suburbs, or our own local area? (NPCA)

Response 24:

The O'Hare Extension is intended to serve a very wide range of patrons. Airport oriented ridership will come from the Chicago region and locations throughout the nation. The intermediate station ridership will be made up mostly of patrons from local areas near station locations. Patrons from other areas of the City as well as suburbanites who access intermediate stations via buses or autos, will also use the line.

Comment 25:

In our opinion, Scheme R-4 would generate the highest CBD-O'Hare patronage of any alternative. (GNMAA)

Response 25:

According to the comparison of the four rail alternatives, Scheme R-4, Milwaukee Road-SooLine Spur, would rank the lowest in regard to total patronage -- 20,200 as compared to 36,500 for the proposed alternative. Although all of Scheme R-4's users from the CBD would be airport oriented since no intermediate stations are proposed for this alternative, fewer of each of the three airport oriented user groups would be served with this alternative than with any other rail option. In addition, patronage levels for alternative R-4 would be affected by the Scheme's longer travel time, low reliability of service, and relatively inaccessible CBD location.

Comment 26:

Using the data in Table II-2 and Table II-1 on Page II-18, the limousine/ coach service would indicate considerably more than the 4,500 persons, per day discussed in the section on "Continental Air Transport" would be using those services. If distribution between 1969 and 1976 changed significantly, the data should be corrected. If the distribution remained similar, it would appear the number stated in the "Continental Air Transport" section should be corrected. (FHWA)

Response 26:

The category LIMOUSINE/COACH in Table II-2 regarding the Modal Distribution for Departing Air Passengers is comprised of several services in addition to Continental Air Transport. Continental Air Transport is a major airport bus service which accommodates approximately 4500 passengers per day between the CBD and O'Hare. However, this service represents only a portion of the 13.8% listed in Table II-2, and not the total amount.

Comment 27:

We find no research in your study to justify the position that businessmen will use this method of transportation. (NPCC)

Response 27:

Patronage statistics were compiled according to six user group categories -- Airline Passengers, Airport Employees, Airport Visitors, CBD Commuters, Reverse Commuters, and Expressway Drivers. Although a further detailed breakdown according to patron profession was not made, a significant portion of the Airline Passenger user group is expected to be businessmen since, according to the 1969 Origin-Destination survey, 92.6% of CBD to O'Hare trips are made for business purposes.

Comment 28:

The highest ridership level the O'Hare Extension will acheive is what the rapid transit service to Cleveland's airport has been able to acheive, namely 20% of the arrivals and departures for approximately 5000 daily riders. (AGTA)

Response 28:

Ridership extimates for the O'Hare Extension airport service are based on a thorough analysis of ridership demand at Chicago's airport and include, not only the air passenger demand, but also the airport employee and airport visitor ground access demand. Comparisons of ridership levels for two different airport ground access systems, Chicago and Cleveland, are not valid since the airport access problems and the airport access systems, themselves, are different.

4. System Construction

Comment 29:

No information is provided relative to measures to prevent undue construction-oriented pollution, including erosion, to the Des Plaines River nor subsequent restoration of the stream bank and any adjoining disturbed lands. (US DOI)

Comment 30:

Erosion should be controlled during construction. (US DOA)

Responses 29 and 30:

The construction operations adjacent to the Des Plaines River will consist of pier, abutment, and foundation installation for the transit stream crossing. The work is expected to take place in coffer dams behind steel sheet piling, thus minimizing the potential for pollution of the river or bank erosion. More specific details regarding construction techniques, erosion protection, etc. are not available at this time since the bridge has not yet been designed. Construction contractors will, however, be required to assure that all appropriate measures to protect the river and restore the banks to a natural condition will be taken.

Excavation will be required to construct the East River Road and O'Hare Terminal subway tunnels. Spoil from these excavations will be trucked out of the site almost immediately since inadequate space is available for stockpiling. Thus, there should be little or no cause for concern regarding stockpile erosion or runoff.

5. Accessibility

Comment 31:

The proposed transit extension would in no way serve the Near Northside (Chicago River to North Avenue - Lake Michigan to North Branch Canal), and would result in a poorer CBD-Airport ground access transportation service for this area and sections of downtown. (GNMAA, AGTA)

Response 31:

As an extension of the Milwaukee-Congress rapid transit line, access to O'Hare Airport will emanate from the most accessible location within the metropolitan area, the "Loop". Currently, nine rapid transit lines converge in the Loop, allowing patrons to easily transfer lines in order to reach other sections of the City and metropolitan area. Although airport bound trains do not directly service the Near Northside, the Lake Street/Clark Street station on the line is only two blocks from the southern boundary of the area, with transfer points to northbound transit and bus lines located at other loop stations.

The addition of another needed mode of airport ground access for the variety of existing airport ground access modes will in no way reduce the levels of service provided to any section of the City or metropolitan area.

Comment 32:

The downtown stations of the Milwaukee Line are so crowded during the evening rush hour that getting on the train, especially with a suitcase, will be very difficult. (R. Pucinski, NPCC)

Comment 33:

It is impossible to ride the Chicago elevated with a suitcase as most travelers will do and again impossible to travel with a party of one or two companions and their luggage. (D. Taylor)

Responses 32 and 33:

The capacity of the Milwaukee Line will be significantly increased by the time the O'Hare Extension opens. The operation of 8 car trains, as opposed to 6 car trains at present, at the same headways now provided, will increase the line's capacity by 33%. If additional changes in capacity are required, adjustments in train headways will be undertaken by the CTA.

The present project does not foreclose the option for provision of on-train baggage facilities by CTA at a later date, if warranted.

Comment 34:

The Dearborn Street subway (the Central Area segment of the Milwaukee Line, of which the O'Hare Extension will be a part) is inconvenient and uncomfortable during inclement weather. (GNMAA)

Response 34:

The Dearborn Subway tunnel runs north and south one block east of the CBD's most central street, a location more convenient than other proposed CBD access points. Naturally, inclement weather increases the difficulty of access to or from any location in the CBD, but the centralized location of the Dearborn Street Subway tunnel will help to minimize access problems created by such weather.

It should also be noted that access to many buildings in the CBD can be made directly from the Dearborn Street subway stations. Access to many other buildings can be made via a system of interconnecting underground pedestrian walkways.

6. Congestion

Comment 35:

Although planners indicate traffic levels will return to normal after construction of the intermediate stations, studies also show increasing development of land in areas around station sites. (DPPC)

Response 35:

The traffic projections used in the planning of roadway improvements at park-n-ride sites are based on projections supplied by the Chicago Area Transportation Study (CATS). The CATS projections include the traffic growth increases generated by increased development. The Chicago Department of Streets and Sanitation staff added park-n-ride traffic to the CATS projections and designed roadway improvements to accommodate all traffic on the roadways.

Comment 36:

Traffic snarls could develop at the Harlem-Bryn Mawr intersection due to bus movements out of the Harlem Avenue station complex via this intersection. (DPPC)

Comment 37:

Traffic snarls could develop at the Harlem-Gregory intersection due to through traffic volumes and to the amount of vehicles making turns at this intersection. (DPPC)

Comment 38:

Although the report says traffic volumes will remain within the capacity limits of Harlem and Higgins Avenues, these streets already operate too close to their capacities, disrupting local residential streets. (DPPC)

Comment 39:

Moving the traffic which presently uses the ramp in the Harlem-Kennedy interchange southwest quadrant to the ramp off Gregory Street via a signalized intersection will back traffic up all the way to Talcott. (R. Pucinski)

Comment 40:

Putting a park-n-ride at Harlem Avenue will create a traffic problem in that community for years to come. (R. Pucinski)

Responses 36, 37, 38, 39, and 40:

At the Harlem-Bryn Mawr intersection, a right turn bay will be added to the southbound intersection approach on Harlem Avenue, increasing the capacity of that approach. Buses turning right from the station onto southbound Harlem will move simultaneously with the northbound left turn movement, which is controlled by a left turn arrow. Thus no time in the signal cycle will be lost for this bus movement. Buses turning left will operate on a demand actuated signal. This is, the approach of a left-turning bus will actuate a 5 second green signal for that movement only. Since the bus left-turn will occur, at most, 15 times per hour, no interruption of traffic flow is expected.

The Harlem-Gregory intersection will be signalized and will operate smoothly. Adequate time in the signal cycle is available to accommodate both through movements and the increased number of left turns. This change will convert the Harlem-Kennedy interchange to a diamond interchange, of which there are many in the Chicago area operating satisfactorily with even higher traffic volumes.

Intersection improvements are underway at the Harlem-Higgins intersection, including the addition of left turn bays, which will alleviate the existing problems at that intersection. Minor modifications will be included as part of this project.

The traffic signals at all three intersections will be synchronized so that traffic entering the area from the north or from the south will move continuously through the three intersections. All turn movements will be synchronized so that they do not conflict with the through traffic. Adequate time exists at each intersection to accommodate all traffic movements.

It should be emphasized that the traffic volumes that these design changes are planned to accommodate include both park-n-ride traffic and traffic increases generated by future development. Furthermore, approximately 62% of all traffic generated by the park-n-ride will not even pass through these intersections. Expressway users and local area users from the west will turn into the park-n-ride before they reach the Harlem-Higgins intersection. Park-n-ride traffic exiting to the expressway will use internal park-n-ride roadways, avoiding local arterial strees altogether.

Traffic will move more smoothly than at present through the Harlem-Kennedy area once roadway improvements are made to accommodate the new traffic. As a result, fewer motorists should be using residential streets to avoid traffic bottlenecks than do now. (See Page V-19.)

Comment 41:

The spill-off of cars on residential streets would result in an auto-ghetto with insufferable environmental effects. (NPCA)

Comment 42:

The report mentions that local streets will have plenty of parking spaces for those not wanting to pay at the park-n-rides. This seems to be an assurance to suburban drivers that local drivers will not use the park-n-ride, but suburban drivers may be tempted to follow suit. (DPPC)

Response 41 and 42:

The discussion in the report relative to on-street parking pressure stated that the presence of the park-n-ride will reduce such pressure. One goal of the park-n-ride design is to reduce the amount of on-street parking as much as possible, whether on-street parkers are local residents or expressway drivers. It should be emphasized that residential street parking demands would be higher without the park-n-rides than with them. Also, see Comment 41 below.

Comment 43:

The Draft EIS totally disregards the possibility of park-n-ride patrons using already crowded airport parking facilities. Conversely, it should address the extent to which the transit facility and intermediate stations can help alleviate this problem. (FAA-GLR)

Response 43:

The use of the airport parking garage by park-n-ride patrons is expected to be insignificant. The airport garage parking fee for a 10 hour stay, $1.65, is significantly higher than any of the proposals for the full day fee at a park-n-ride, which would be purposely structured to discourage use of the airport garage. Second, the airport garage is inconveniently located for CBD commuters. The garage is located at the terminal end of Ill. 594. The first point at which Ill. 594 intersects a major roadway is 1.3 miles toward the CBD from the airport. Any CBD commuter wanting to use the airport garage as a park-n-ride would be forced travel at least 1.3 miles away from their destination, then backtrack over this distance again via transit.

It should be emphasized that it is impossible to ban drivers from using the airport garage for park-n-ride use since it is a public facility. On the other hand, use of intermediate station park-n-rides by airport patrons is feasible for those persons who are making a same day round trip, e.g. some business travelers. Overnight parking at the stations will be forbidden.

Comment 44:

The O'Hare Rail Rapid Transit Extension will not significantly reduce the ground access problems at O'Hare Airport. (AGTA)

Response 44:

The impact of the O'Hare Extension on airport traffic is fully discussed on pages V-15 and V-16 of the FEIS. As stated therein, and as demonstrated by data presented in Tables V-2 and V-3, the provision of rapid transit will reduce the vehicle load on airport roadways, preventing service breakdown conditions during the peak hours.

Comment 45:

Taxpayers have witnessed the noise-air pollution and traffic congestion at the Jefferson Park station and don't want it in their backyard. (NPCA)

Response 45:

The traffic congestion and its associated environmental problems at Jefferson Park are largely attributable to heavy on-street parking and drop-off traffic due to the status of the station at the end of the transit line. This proposed project will mitigate these problems by providing parking garages. In addition, the intermediate stations will not be at the end of the line.

Comment 46:

The Harlem and Cumberland garages would generate traffic congestion in residential areas surrounding the garages. (F. Miller, R. Pucinski)

Comment 47:

Traffic from the Cumberland Avenue Park-n-ride would endanger an already heavily travelled Cumberland Avenue. (NWCA)

Responses 46 and 47:

A number of improvements, including widening of Cumberland Avenue, improvement of adjacent intersections, and upgrading of traffic signalization, are being undertaken to insure that levels of service remain within acceptable limits.

Cumberland Avenue will not be overloaded. At the intersection serving the park-n-ride, Cumberland will operate at Level of Service "D" during peak hours, which is above the intersection's capacity.

The layout of local streets near the Cumberland Avenue Park-n-ride is not the grid pattern evident in other sections of the City. Residential streets do not form unbroken paths parallel to Cumberland that would facilitate use of these streets to avoid congestion on Cumberland. During periods of heavy traffic, however, use of local streets by some motorists would unavoidably occur. The plan to minimize this problem includes providing the best possible level of service on Cumberland Avenue so as to eliminate the perceived need to use local streets. (See Page V-22.)

Comment 48:

The removal of the southbound exit ramp from the eastbound Kennedy Expressway at Cumberland Avenue, where traffic is already backed up to the tollbooth (on the Northwest Tollway) during rush hours and holidays, would result in traffic not moving at all. (NWCA)

Response 48:

The southbound exit ramp from the eastbound Kennedy Expressway lanes at Cumberland Avenue will not be removed. The alignment of this ramp will be shifted slightly to the southwest, but its location and free flow characteristics will be retained.

Comment 49:

We are told that entrance to the park-n-ride will be from the expressway, then why put the facility at Harlem and the Kennedy which will serve only suburbanites? (R. Pucinski)

Response 49:

Entrance to the Harlem Avenue Park-n-Ride will be made from Higgins Avenue and will be available to both expressway drivers and area residents via the arterial street system.

Comment 50:

The increased traffic congestion resulting from the Harlem Avenue Park-n-Ride would impair traffic flow from the Hospital's Emergency Room (four blocks west and three blocks north of the park-n-ride site). In addition, Hospital bound traffic northbound on Harlem and westbound on Higgins would be adversely affected. (RH)

Response 50:

Traffic congestion will be somewhat reduced from its present level after the operation of the Harlem Avenue Station begins. The increased congestion referred to in the EIS does not refer to increases over present congestion levels, rather to increases in congestion on the improved arterial roadways that would occur with station oriented traffic over that which would occur without it. In either of these latter two cases, levels of congestion would be lower than present levels even though traffic volumes may increase. Furthermore, elimination of the park-n-ride would have only a minimal (2%) effect upon traffic volumes in the vicinity of the Harlem Avenue station. As a result, traffic between Resurrection Hospital and points south of the expressway will move in generally the same or less time than at present.

Access to the hospital from the eastbound expressway lanes, and therefore from the airport, will be improved with the proposed ramp redesign. Traffic will move freely onto eastbound Higgins Avenue, instead of accessing Higgins Avenue via an intersection controlled by a stop sign, thereby providing faster egress from the expressway. The improved Harlem-Higgins intersection will facilitate movement through this point, and interconnected signals on Harlem will maintain adequate flow on northbound Harlem Avenue.

Comment 51:

There is no traffic analysis that reflects the already congested condition of Harlem Avenue and the other thoroughfares immediately surrounding the location of the Harlem Avenue station. Unless a detailed plan to alleviate the existing congestion are included as part of the rapid rail transit extension, we would be opposed to locating a station at Harlem Avenue and the Kennedy Expressway. (NPCC)

Response 51:

The existing congested condition on Harlem Avenue and other area arterial streets is a function of traffic volumes exceeding the capacities of area intersections. Since the proposed improvements increase the capacities of area intersections enough to accommodate higher traffic volumes than presently exist, a detailed plan to alleviate existing congestion is redundant. The proposed package of street improvements is a detailed plan to prevent additional congestion on Harlem Avenue and other arterials in the vicinity of the Harlem Avenue Station.

Traffic improvements to the arterial Street System in the vicinity of the Harlem Avenue Station will include:

1) Provision of a turning bay on southbound Harlem Avenue at Bryn Mawr. The turning bay will accommodate the traffic which turns right at this location (between 25 and 30 percent);

2) Provision of a southbound pull-out bay on the Harlem Avenue bridge which will allow bus drop-offs without interfering with southbound through traffic;

3) A traffic signal at the Harlem Avenue-Gregory Street intersection which will permit all eastbound Kennedy Expressway traffic to enter the expressway ramp via a left turn onto Gregory. This signal will be timed with a "four phase signal overlap" timing schedule used for "diamond interchanges"; and will be synchronized with the signals at both Bryn Mawr Avenue and Higgins Avenue; and

4) Throat widening and channelization of the Harlem-Higgins intersection. This will provide left-turn bays on all approaches, thus allowing two lanes of through traffic at each approach instead of one.

Comment 52:

Eliminating the Harlem Avenue and Cumberland Avenue park-n-rides might substantially limit traffic overloads. (DPPC)

Response 52:

Elimination of the park-n-ride facilities would represent a traffic volume situation intermediate between the no-build and the proposal with intermediate stations and park-n-rides since a proportion of the local users would still access the stations via auto. This increased traffic load would require the same traffic control and signalization features as would the park-n-rides. The level of service would be slightly better than with the park-n-rides and there would be a lower potential for overloads. The difference is not considered substantial, however, since a decrease of only about 2% would be expected at Harlem and 1% at Cumberland is no park-n-rides were built.

7. Air Quality

Comment 53:

According to the study, the extension with intermediate stops will improve regional air quality by reducing the number of cars emitting pollutants. It is difficult to tell how regional air quality is measured. (DPPC)

Response 53:

Impacts on regional air quality are most often measured by the total weight of various air contaminants emitted by stationary or mobile sources. Changes in these total weights are an indicator of changes in regional air quality. Thus, a regional air quality benefit of the extension is reflected in the vehicles which would use park-n-ride facilities that would otherwise be emitting pollutants over the entire trip to the CBD and back. As noted on Page V-31 of the FEIS, data derived from a detailed US EPA study of pollution control measures, including park-n-rides, indicates that the 2600-car capacity of the proposed park-n-rides alone could result in a 1.5% decrease in total carbon monoxide emissions in the Chicago Transportation Control Area.

Comment 54:

Use of park-n-ride garages will increase pollution. (F. Miller)

Response 54:

Use of proposed park-n-ride garages will result in more air pollution in local areas near garage sites than would exist without them. See page V-34 of the Final EIS. Even so, because of emission reductions expected through the Federal Motor Vehicle Emission Control Program, air quality in areas near station sites is expected to be better after park-n-ride facilities begin operation in 1981 than it is at present. In addition, regional air quality benefits will be accrued through operation of the three park-n-rides.

Comment 55:

The adverse short-time CO impact near the Harlem Avenue Park-n-Ride facility should be mitigated by optimizing the traffic flow in and around the park-n-ride facility. The parking should be designed to minimize excessive idling of existing vehicles. (IEPA)

Response 55:

Significant improvements to roadways serving the Harlem Avenue Park-n-Ride will be made to minimize traffic flow disruption. The Harlem Avenue Park-n-Ride incorporates a major design feature to facilitate movement of existing vehicles. A bridge over the expressway will be provided to allow direct egress from the park-n-ride to the westbound expressway lanes. Provision of this bridge will facilitate the quick exit of all vehicles from the garage, and minimize traffic flow interruptions on surrounding arterial streets.

Comment 56:

Table II-4, page II-24, should be modified or deleted because the basis for the toxicity calculation is outdated. (DEC)

Response 56:

Table II-4 has been modified. Tolerance factors used in the revision of the table were issued by the U.S. Environmental Protection Agency in 1976.

8. Noise

Comment 57:

Intermediate stations will generate the greatest amount of additional noise due to noise from trains, feeder buses, and park-n-ride facilities. (DPPC)

Response 57:

Increased noise levels will occur in the vicinity of the intermediate stations as a result of passing trains, feeder buses, and park-n-ride facilities as detailed on pages V-40 to V-43 of the FEIS. Located in an established noise corridor, the additional noise from the trains and park-n-ride facilities at the intermediate station locations will occur at times of the day when other transportation related noise levels will be at a maximum. Increased feeder bus traffic is not expected to have a serious noise impact given the volumes of traffic normally using primary and secondary arterials in the vicinity.

Comment 58:

Additional information should be provided concerning measures to reduce noise levels at the subway station. (US EPA)

Response 58:

Three measures are being implemented to control noise at the O'Hare terminal subway station:

A. Resilient track fastening will be employed to reduce structure-borne vibration due to wheel-rail interactions.

B. A permanent speed restriction of 25 MPH will be enforced in the station and tunnel as a safety and noise control measure. High subway noise levels are associated with high speed train operation. Operation at speeds below 24 MPH will result in drastically lower noise levels.

C. A noise control consultant, Wilson-Ihrig & Assoc., is being retained to develop specifications for sound absorbing materials usage in the station proper.

Comment 59:

Two elements of the current HUD external noise exposure standards for new residential construction might be relevant to the project. First, sites where the exposure exceeds 80 dB(A) for 60 minutes per 24 hour period are clearly unacceptable for residential development. Secondly, "loud repetitive sounds on site" render a site discretionary/normally unacceptable. While not precisely defined, this criterion is intended to apply to sites which are subject to significant train and airplane noise. (US HUD)

Response 59:

Current HUD external noise exposure standards which are relevant to this project are incorporated on page II-35 in the FEIS.

9. Energy

Comment 60:

Garage use will increase gasoline consumption. (F. Miller)

Response 60:

An investigation was undertaken to determine the net increase or decrease in fuel consumption that would result from use of the O'Hare Extension. This investigation was carried out for five separate O'Hare Extension user groups, including park-n-ride patrons. In each of the five cases, and for the project as a whole, it was determined that substantial energy savings would be accrued. See Page V-46 of the FEIS.

Comment 61:

The approximate 1000 riders per day increase in patronage resulting from the construction of the Harlem Avenue Park-n-Ride is a very high price to pay for the increase in fuel consumption which will result. (R. Pucinski)

Response 61:

The increase in CTA ridership to be generated through use of the Harlem Avenue park-n-ride would not be generated at the expense of increase petroleum fuel consumption. Use of the Harlem Avenue park-n-ride will result in a decrease in based fuel consumption, as drivers short-cut longer auto trips by diverting to mass transit. See above comment and Page III-45 of the FEIS.

Comment 62:

The assumptions used in the energy impact analysis of the recommended alternative are false and should be redeveloped. (AGTA)

Response 62:

The assumptions used in the energy impact analysis are documented on page V-45 of the FEIS. The analysis, as is indicated on page V-45, is intended to demonstrate the effect of the proposed extension on trip related energy consumption. In the development of the analysis, the energy efficiency of travel modes from which patrons will divert to rapid rail and changes in access routes for both auto and bus have been considered.

10. Recreational and Historic Properties

Comment 63:

No information is provided as to whether there is north-south public access through the transportation easement land nor whether that access will be maintained during and after project construction. (US DOT)

Response 63:

The Forest Preserve District of Cook County maintains a "developed trail" for pedestrian/cyclist/equestrian traffic through its Indian Boundary Division which passes over the transportation easement via a highway bridge at East River Road. There will be no effect upon this access either during or after construction.

11. Safety and Security

Comment 64:

Does the fact that the Kennedy Line passes through low crime areas and the relationship between crime in rapid transit stations and crime rates in areas surrounding stations guarantee that our area will be free from an increase in crime simply because criminals are not supposed to strike on unfamiliar transit platform? With homes and businesses less than a block away on foot, and increased accessibility of bus routes to each surrounding area, local police can probably expect increased possibilities of crime. (DPPC)

Response 64:

As a continuation of a very low crime segment of the CTA transit system, it is anticipated that in-station crime and crime rates in areas surrounding the stations will be unaffected by the transit project. For more detailed information concerning the relationship between crime in rapid transit stations and crime rates in areas surrounding the stations, refer to Safety and Security on pages V-48 and V-49 of the FEIS.

Comment 65:

Traffic congrestion at intermediate station sites will impede ambulance access from O'Hare Airport to Resurrection Hospital, the official receiving hospital for the airport. (R. Pucinski)

Response 65:

The designated exit from the Kennedy Expressway, and hence from O'Hare, to Resurrection Hospital is at Harlem Avenue. Exiting from the westbound expressway lanes, access to Harlem Avenue is made via Bryn Mawr Avenue, which will incur no change in peak hour traffic volumes due to the proposed park-n-ride at Harlem Avenue. Exiting from the eastbound lanes, the route from O'Hare Airport, ambulance and emergency vehicle traffic would access Harlem Avenue via Higgins Avenue. The exit movement from the eastbound expressway lanes to Higgins will be significantly improved by the proposed exit ramp modification. This modification will allow free flow movement off the expressway, avoiding the present stop-sign controlled, three way, expressway exit ramp - Higgins Avenue intersection. Movement through the Harlem-Higgins intersection will be somewhat improved after project completion due to addition of turn bays, channelization, and improved signalization.

The proposed improvements are expected to have no adverse effect on access to Resurrection Hospital from O'Hare Airport via the eastbound expressway lanes.

Comment 66:

The Dearborn Street subway (the downtown segment of the Milwaukee Line, of which the O'Hare Extension will be a part) is possibly unsafe particularly during non-rush hours. (GNMAA)

Response 66:

The Dearborn Street subway, as with other subway stations within the Central Area, is heavily patroled by police during both rush hour and non-rush hour periods; and is as safe or safer than other stations in the Central Area - including those located on the Near-Northside. As referenced in the report-Improvement of Mass Transit Security in Chicago (1973), CBD stations on the Milwaukee line are among the safest within the entire rapid transit system. Compared below are the total number of crimes (from January 1971 - July 1972) and the percentage of total system crimes on the Milwaukee Line (West-Northwest) and the North-South Line which directly services the Near-Northside area.

	Transit Station	Total Number of Crimes	% of Total System
Milwaukee Line	Lake/Clark	4	0%
	Washington	9	1%
	Monroe	1	0%
	Jackson	8	1%
	LaSalle	6	0%
North-South Line	Clark/Division	11	1%
	Chicago	37	2%
	Grand	10	1%
	Washington	44	3%
	Monroe	11	1%
	Jackson	42	3%

12. Economics

Comment 67:

The belief that the extension will maintain the CBD as a highly attractive business area and strengthen the area's role as a regional hotel and convention center is purely mythical. (AGTA)

Response 67:

Chicago has developed one of the most economically viable Central Areas in the nation primarily as a result of its accessibility to and from most sections of the metropolitan region. By extending rapid transit service to residents on the Northwest Side of the City and by providing transit service to airport bound passengers and employees from the entire metropolitan area, the CBD, which is the major destination, origin, or transfer point of most of these trips, will accrue significant economic benefits. Increased accessibility to the CBD will support its business and retail activity. Provision of an overall ground access system capable of handling increased CBD-Airport traffic will help maintain the CBD and Chicago as the most viable convention center in the nation.

Comment 68:

The airline travelling public, in general, represents the most affluent members of society who will enjoy heavily subsidized travel to and from the airport via the proposed extension. (AGTA)

Response 68:

The O'Hare Extension has been planned to satisfy a need for improved transportation to O'Hare Airport and the Northwest section of Chicago. An adequate ground transportation system is essential to the ongoing viability of O'Hare Airport. The need for improved airport related ground transportation is not determined by the relative affluence of those receiving the service. It should be emphasized here that the O'Hare Extension will provide a needed transportation service to all segments of the population, regardless of their affluence.

Comment 69:

The total cost estimate in the study has not considered the continued inflationary spiral to which the economy is committed. We therefore conclude that the cost estimates are incorrect and that the per capita cost of this extension will be significantly higher than included in the study. (NPCC)

Comment 70:

Federal, State, County, and City projects, including the O'Hare Extension, overestimate the benefits and underestimate the costs. (NPCA, AGTA)

Based on past history, we have reason to believe that project costs will double to $375 million. (NPCA)

Responses 69 and 70:

Cost, revenue and patronage estimates for the O'Hare Extension have been carefully analyzed by a number of professional agencies. These estimates represent the best available projections of actual costs, revenues, and ridership. They have not been altered or modified to make the project appear more attractive.

As explained in Chapter V of the Final EIS, the project cost inflated to 1980 dollars is $152.5 million. For costs to double by the end of construction, the 1981 inflation rate would have to be 100%.

Comment 71:

Can the taxpayers afford to have so few people, 36,500 per day, served at such a hugh cost. (NPCA).

Comment 72:

I protest the construction of the Rail Rapid Transit Extension to Chicago O'Hare Airport as an unnecessary use of taxpayer's money. (D. Taylor)

Responses 71 and 72:

The O'Hare Extension will have major benefits that extend beyond the simple transport of people. The expenditure of public funds for this project will result not only in transportation benefits to a wide range of patrons over long project life, but will also result in economic, environmental, energy, and social benefits..

Assuming the patronage on the O'Hare Extension remains constant, the extension will serve about 435 million passengers over the next 30 years. The Chicago Area Transportation Study (CATS) has indicated that on a passenger miles per route basis and on a cost per passenger mile basis, this extension compares favorably with existing lines and other proposed extensions.

Comment 73:

The residential home in the impact areas of Harlem-Cumberland would depreciate if the park-n-ride was constructed. (NPCA)

Response 73:

Studies of real estate values in the vicinity of the Jefferson Park CTA terminal have indicated that a marked increase in property values occured, possibly due to the transit service. Since no park-n-ride is present at Jefferson Park, the problems of residential street traffic and on-street parking exceed those which would occur if one were built. There is, therefore, no reason to believe the Park-n-Rides will result in home depreciation.

Comment 74:

At $7,300 per parking space, park-n-ride garages are not cost effective. (F. Miller)

Response 74:

The cost per space for each park-n-ride are listed below:

Harlem Avenue	$5,777 per space
Cumberland Avenue	2,916 per space
Rosemont	2,484 per space

The proposed park-n-ride garages will not recover the capital investment required to construct them from revenues generated through their use. The park-n-rides are proposed to produce benefits, some of which, like improved regional air quality, are not reducible to dollar amounts, and others, like energy conservation, whose importance extends beyond the simple dollar value of impacts.

Comment 75:

By eliminating the park-n-ride facilities, $17 million could be saved. (F. Miller)

Response 75:

Eliminating the three intermediate station parking facilities would reduce the project's capital cost by $8.4 million.

Comment 76:

No discussion was included under economic impact of the effect of the proposed transit system on the private taxi/livery services now being afforded passengers at O'Hare. (IDOT-DA, Pate)

Response 76:

Neither taxi companies nor Continental Air Transport should expect decreased patronage as a result of the O'Hare Extension. By 1985, the total number of weekday person trips to the airport will increase from the 1976 level of 172,500 to 248,900. It is projected that patronage on the O'Hare Extension will not equal the difference between 1976 and 1985 person trips. As a result, the demand for highway access will be greater than at present. The share of the airport ground access ridership market captured by taxi and airport bus is not expected to decrease.

Projections generated for air passengers' trips to O'Hare Airport indicate that in 1985 the Taxi and Limousine/Coach modes will carry 135% and 106% of their 1976 patronage, respectively.

Comment 77:

We, as businessmen, are fundamentally opposed to any rapid transit projects which will not be financially self-supporting and which will require subsidies on a continuing basis. (NPCC)

Response 77:

The provision of adequate public transportation is not a business venture intended to generate profits. It is rather a public service provided by local governmental agencies with the support of the Federal government intended to insure that the welfare and vitality of urban areas, and satisfactory movement of people and goods within urban areas is not jeopardized by the continued reliance on motor vehicles and consequent traffic congestion.

Comment 78:

Chicago taxpayers are going to pay more taxes for an extension and parking facilities to benefit only the suburbs. (NPCA)

Response 78:

Neither the financial burden nor transit benefits are limited only to the City or suburbs. Through the RTA, each share in supporting region-wide transit operations while capital construction funds are provided by UMTA from national sources. The O'Hare Extension will serve a wide patronage. See response to Comment 22, Topic III.

Comment 79:

Since the construction of the O'Hare Extension will consume a large amount of the UMTA Section 3 capital funds for the Chicago region at the expense of other regional capital projects, a detailed fiscal impact statement should be prepared and included in the FEIS. (NWMC)

Comment 80:

DPRPC does not endorse the project because of its impact on the supply of UMTA Section 3 Capital Funds in the region for FY'78, until such time as the priorities for UMTA's use of Section 3 monies is clearly addressed. (DPRPC)

Responses 79 and 80:

The priorities for use of UMTA Section 3 capital grant monies within the Chicago region are established in the Metropolitan Planning Organization (MPO) forum through the Transportation Improvement Programming (TIP) process described by joint UMTA/FHWA planning/programming regulations issued in September, 1975. For the FY'76-80 TIP, all potential UMTA Section 3 applicants, including the City of Chicago, the commuter railroads, and suburban transit districts identified their project needs and negotiated a fiscally constrained program of projects in the MPO forum. The O'Hare Extension has been included in the fiscally constrained five-year TIP (FY'76-80) as well as in the FY'78 Annual Element.

As a result of negotiations among transit interests in the region, funding for the O'Hare Extension was reduced from 55 to 32 million dollars for this first phase.

Comment 81:

Would it be cheaper to operate a commuter rail or CTA rapid rail service to O'Hare Airport? (Pate)

Response 81:

The proposed CTA service to O'Hare Airport operates at an operating cost lower then either commuter rail alternative studied. See Page III-21 of the FEIS for annual operating cost figures.

Comment 82:

Would the service provided by the O'Hare Extension result in more patronage of O'Hare area, as opposed to CBD, hotels? (Goldblatt)

Response 82:

During the 30 year period from 1948-1977, Chicago has annually hosted over 1000 conventions, except for a brief lull in 1969-1972 due to the loss of McCormick Place and the effect of the 1968 Democratic Convention. Recent CBD area completion of luxury hotel accommodations totalling about 4000 rooms, the influx of major corporate headquarters such as Standard Oil, Sears Roebuck, etc., and construction of eleven major office buildings assure that Chicago will remain one of the largest convention centers in North America. There is no reason to believe that improving public transit access to the CBD from O'Hare Airport would adversely affect the momentum implicit in this strong CBD developmental activity.

13. Airport Planning

Comment 83:

No discussion could be found regarding the impact of the proposed facility on the City of Chicago's efforts to divert some airline traffic to Midway. (IDOT-DA)

Response 83:

The O'Hare Extension will have no effect on the City's effort to divert some airline traffic to Midway Airport. Midway Airport is a potentially valuable asset to the region's transportation network; and efforts to revitalize the southwest side facility will continue regardless of increased accessibility to O'Hare provided by the extension. The Civil Aeronautics Board recently granted tentative permission to five airlines to operate low-cost commuter service between Midway and 17 other locations.

14. Project Planning

Comment 84:

The entire matter should be restudied in the public interest, so that the Near Northside is served in the most efficient and least expensive manner possible. (GNMAA)

Response 84:

The purpose of the O'Hare Extension is to provide fast, reliable and convenient access to O'Hare Airport from all sections of the CBD, not just from the Near Northside. The Near Northside has always been an integral, but not exclusive, section of the CBD in CBD-airport transit planning. To restudy the entire matter at this point would be a purely redundant effort which would be undertaken at a significant expenditure of public funds.

Comment 85:

A new origin-destination study should be conducted to learn the actual facts of air traveller preference in travelling between the CBD, including the Near Northside, and O'Hare. (GNMAA)

Response 85:

The origin-destination studies undertaken in 1964 and 1969 as a part of project planning for the O'Hare Extension established a significant demand for travel between O'Hare Airport and the CBD, which includes the most highly developed section of the Near Northside centered along Michigan Avenue.

Based on data gathered in these studies, origin-destination projections were generated upon which project planning has been based. These projections account for the increased travel demand between the northern section of the CBD and the airport.

Projections of airport oriented transit ridership for the various alternatives considered were generated through the use of a modal split model. This model was calibrated before projections were made to insure their validity.

Comment 86:

None of the residents living in the impact area were interviewed as to the people's reactions to stations and park-n-rides at Harlem and Cumberland. (NPCA)

Response 86:

Individual interviews with private citizens are not necessarily included as features in the planning of every transit improvement project. In this case, citizens were able to express their opinions and reactions through the formal public hearing process and Draft EIS comment period carried out in accordance with UMTA regulations. In addition, public involvement meetings have been held in the adjacent communities offering residents opportunities to discuss the proposed rapid transit project.

Comment 87:

Due to the long and short terms adverse effects, the project should be put on the back burner for more consideration. (NPCA)

Response 87:

The proposed project has been under study and development for over ten years in order to identify and address transportation, environmental, social and economic needs and issues. Its long and short term effects have been evaluated in detail in this FEIS in order that a decision in the greatest public interest could be reached. To restudy the proposal at this point would be a redundant effort.

15. Maintenance

Comment 88:

The CTA makes no guarantee to repair well travelled streets near station sites that bear increased traffic loads. (DPPC)

Response 88:

The CTA is not responsible for street maintenance. Maintenance of streets in areas surrounding the intermediate stations will be the responsibility of the highway agency which has jurisdiction over the streets. These agencies are -- the Illinois Department of Transportation, the Cook County Department of Highways, and the City of Chicago Department of Streets and Sanitation.

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